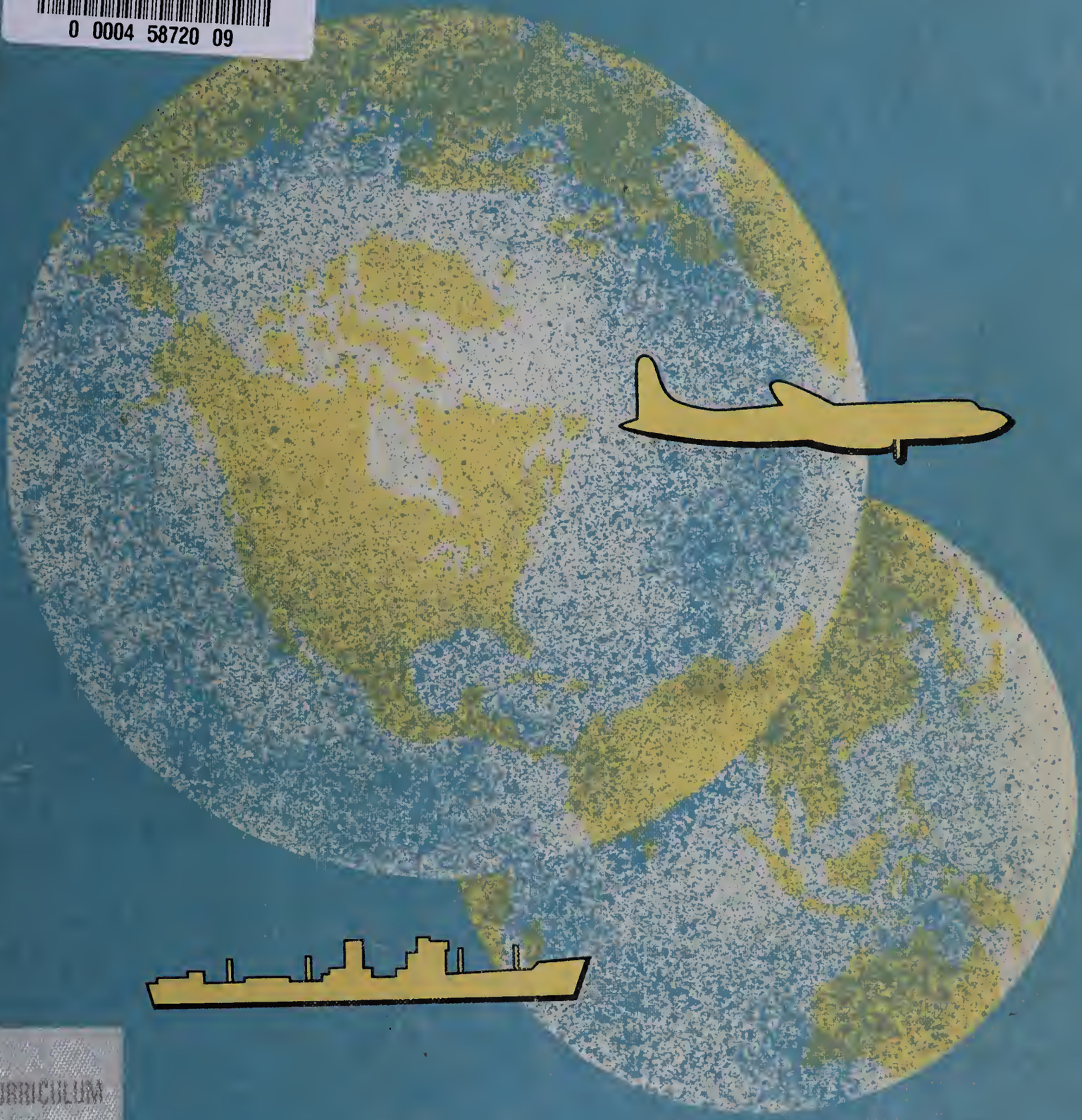
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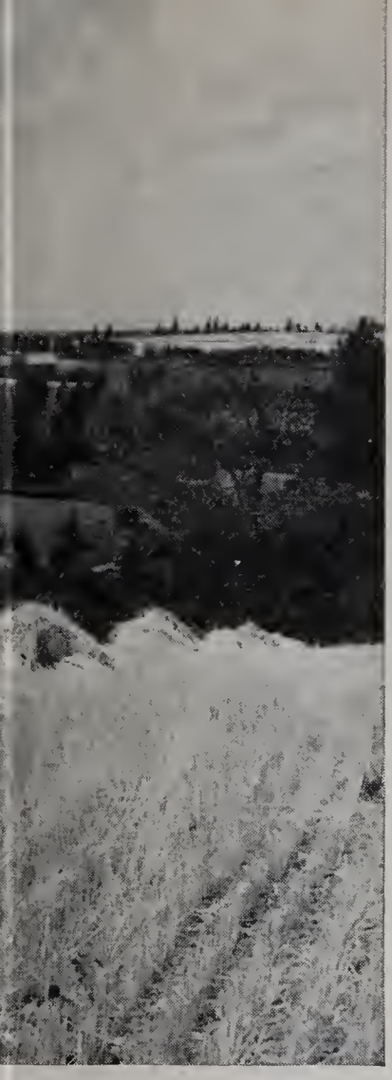

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OUR LAND AND OUR WORLD









OUR LAND AND OUR WORLD

A. W. Boggs
J. W. Hamilton
W. R. McConnell
M. F. McHugh
J. W. Watson

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TO THE TEACHER

VIEWPOINT

The major purpose of this book is to provide the pupil with some simple, wholesome, realistic ideas about the world and the people who live in it. *Our Land and Our World* deals with ways of life that are unfamiliar to the pupil, but constant comparisons are made between the child's own community and the community being studied. In this way, the pupil is led to a sympathetic understanding of how other peoples live and to a realization that the basic needs of people all over the world are the same, and that their ways of providing for their needs are perfectly natural.

Throughout the world the environment, particularly the social environment, is always changing. In recent years, these changes have been tremendous. Today, all men and all regions are interrelated, for nowhere is there any longer a truly isolated region. Since all this is true, a new viewpoint and a new organization of material are necessary in the teaching of geography. We must make the whole world our subject and relate to it each region studied. We must be concerned with the way people live, the way they behave, the reasons for their behavior patterns, and for the changes that are taking place in these patterns. Hence, this book, for the purposes of study, divides the world roughly into regions in which live people with the same way of life.

OBJECTIVES

This book should develop:

1. The following major ideas:

a. All people everywhere live natural lives. They seek the necessities of life in ways that are influenced by their environment and by their past experiences and present abilities. Ways that seem strange to us are natural and sensible to them.

b. All people everywhere are interdependent.

2. The following skills:

a. The ability to find and interpret maps that will be of help.

b. The ability to perceive relationships and understand principles, and the ability to extend these from the specific situations under which they developed to general situations, wherever they are significant.

CONTENTS

The contents of this book include the geography of the world in relation to Canada.

The introductory section. The introductory section of this text sets up a viewpoint and a method of approach for the book as a whole. It has these purposes:

1. To relate the pupil himself and his own experiences to the world he is studying. What he knows from direct experience in his own community is the starting point. He learns that all parts of the world are interrelated in every aspect of environment and culture.

2. To provide the pupil with basic map equipment.

3. To initiate world understanding. The pupil is given some basic concepts which he needs for considering the world as a whole. As he studies the various regions of the world in later sections, he should begin to see them as part of a great world pattern. To develop such a viewpoint is to make a beginning in world understanding.

The succeeding sections. The succeeding sections of this book apply the general understandings presented in the introductory section. The simple textual material provides a source from which the pupil can get the information necessary to carry out interesting and useful activities. It also provides a stimulus toward the intelligent use of the excellent and abundant visual material.

The maps. The map equipment in this book is excellent. Of special interest are the eight consecutive pages of maps, pages 8-15. There, in one place, are the maps that will be used constantly throughout the year. This grouping provides an initial experience in the establishment of the atlas habit. As the year's work progresses, the pupil is expected to make more and more use of these maps on his own initiative. He should learn to use them whenever he needs them. Learning to use maps as needed, not merely how to use them, should be one outcome of the study of geography.

The authors and publisher feel that the pupils will find the merged relief maps of the continents and of Canada, the United States, and Middle America particularly useful. Instead of having to interpret color symbols the students can actually see what the topography of a region is.

THE GEOGRAPHY WORKSHOP

The workshop is an integral part of each section. Teachers and pupils should examine the workshop carefully before the unit of work is begun, since some of the suggested activities will be more useful if they are started at the beginning of the section and continued through the entire study.

The workshops have the following functions:

1. To test. Each workshop has one or more objective tests based upon some of the more concrete or factual aspects of the preceding work.

2. To provide experience in geographic interpretation. In every workshop, pupils are asked to use their knowledge of geography in interpreting pictures, current events, and local community activities.

3. To relate the pupil's own community to the world. The workshop at the end of Section One guides the pupil to a better understanding of his own community. The succeeding workshops help him to use community resources to understand remote parts of the earth. At all times, the workshops keep before the pupil the realization that his own community is part of the world and has some relation to even its most remote regions.

4. To provide for individual differences. Interest and ability should determine the selection of activities, the amount of time spent on each one chosen, and the goals reached. The workshops provide activities in which all pupils can find a place. The most limited will find something to do that gives them a satisfying sense of achievement, and the more gifted will find interesting problems to challenge their talents. The range is wide enough to provide an outlet for any special abilities.

GLOSSARY

On page 414 is a glossary of geographic terms found in this book, along with definitions of other words with which the pupils might not be familiar. The first time a word that is in the glossary appears in the text it is italicized. The teacher should encourage the pupils to look up italicized words in the glossary when they come across them. The pupils should also learn to look up any words that they are not familiar with, even though they may not be italicized, as the word might have occurred earlier in the text.

In a country like Canada, especially, the teacher should emphasize not only our own just pride in our own achievements, our confidence in our own destiny, our determination to build up a united people. He should also emphasize the inescapable inter-relationship between Canada and other countries. For no country in the world is this inter-relationship more important. Our experience in the past proves this. Developments in the future will drive it home, both in the economic and the political field. For Canada, therefore, as much as for any country in the world, a sound and understanding knowledge of other countries, of their history, their problems, and their possibilities is essential. Only on such knowledge can peaceful and progressive international relations be based.

THE HONORABLE L. B. PEARSON
Former Secretary of State for External Affairs

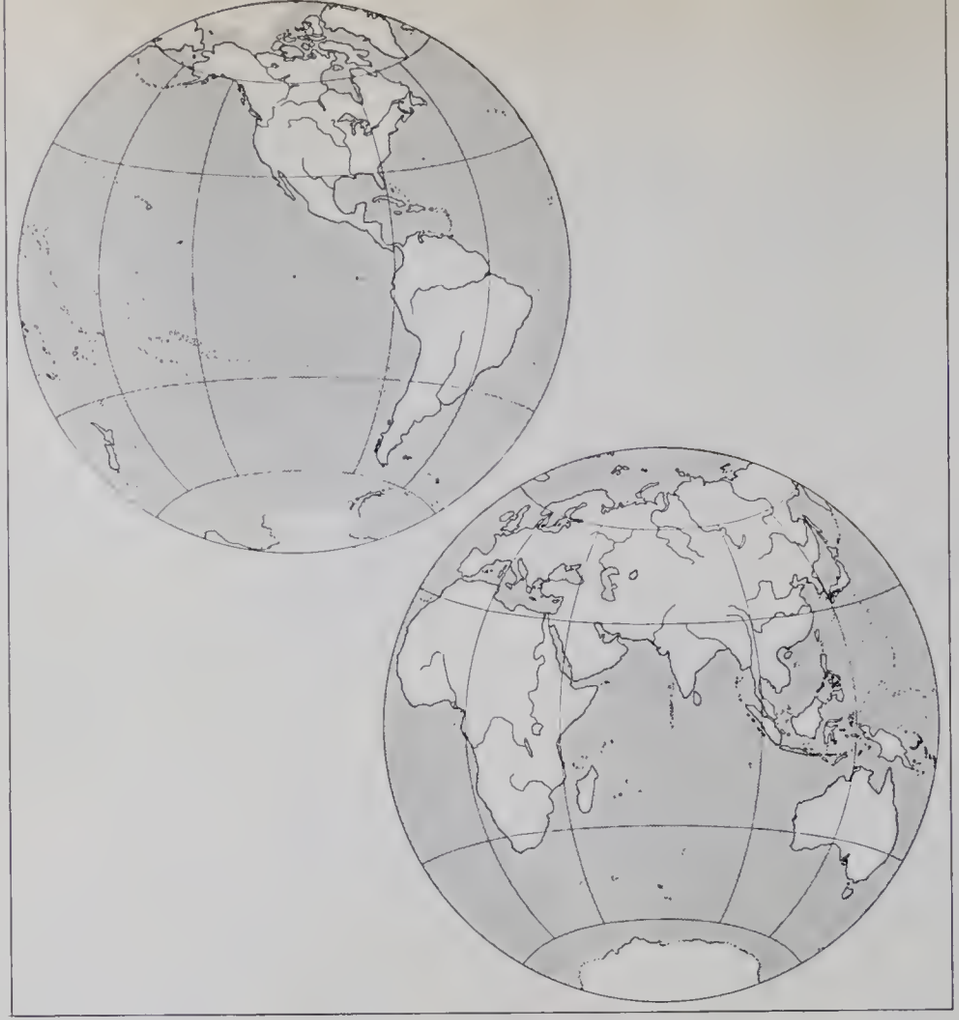

THE WORLD
Scale of Miles
0 400 800 1600
• Selected World Cities
Shading from green through yellow, brown, and red indicates increase in altitude. Figures show approximate altitude in feet for corresponding color.
10,000 ft.
5,000 ft.
2,000 ft.
1,000 ft.
500 ft.
ASIA
EUROPE
URAL MTS.
Arctic Ocean
North Pole
Polar Ice Pack
Bering Sea
ICELAND
GREENLAND
Pacific Ocean
Atlantic Ocean
NORTH AMERICA
Hudson Bay
120°
80°
160°
40°
0°
North Pole
Arctic Ocean
Pt. Barrow
Mt. McKinley
Mackenzie R.
Bering Sea
ALEUTIAN ISLANDS
ROCKY MTS.
Hudson Bay
GREENLAND
NORTH AMERICA
Great Lakes
Montreal
Chicago
New York
Mississippi R.
Los Angeles
Gulf of Mexico
Trapic of Cancer
HAWAIIAN ISLANDS
Mexico City
WEST INDIES
Caribbean Sea
CENTRAL AMERICA
Atlantic Ocean
AZORES
CAPE VERDE ISLANDS
Pacific Ocean
Equator
0° North Latitude
South Latitude
160°
120°
80°
40°
West Longitude
Amazon River
SOUTH AMERICA
ANDES MOUNTAINS
SAMOA ISLANDS
Trapic of Capricorn
Rio de Janeiro
Mt. Aconcagua
Santiago
Buenos Aires
Cape Horn
Weddell Sea
Ross Sea
South Pole

WORLD MAPS

The need to see world relationships at a glance is the reason for flat maps of the whole earth, such as the one on these two pages. Only on a map of the world can all the cantinents be in view at the same time. Maps of single continents ar of smaller areas should be used for detailed study. A globe should be used for study of distances and directions an the earth.

This warld map is valuable for comparisons between continents as to size, shape, and distribution of land forms. It should be used also in comparing latitudes from continent to continent.





EXPLORING YOUR WORLD

What part of the *earth* do you know best? Is it the land you see as you go to school in the morning? Is it your own yard or a field or a vacant lot near your home? In some small part of the earth, you know every tree and every change in the slope of the land. Then there is a larger area that you know almost as well. You can find your way about in it, and you can describe it though perhaps not in detail. There is a still larger area that you have seen on trips. This area is not entirely strange to you because you have seen it yourself.

You can become familiar with parts of the earth that you have never seen. You can become acquainted with them by looking at pictures, studying *maps*, and reading.

Models of the earth. Perhaps you play with a train at home, or make model airplanes. These are like the trains and airplanes that carry people and things from city to city. They are smaller than the real ones. We call them model trains and model airplanes. We have models of the earth called *globes*. The globes are round because the earth is round.

Look at the globe in your classroom. The land areas are called *continents*. Can you find the names of seven continents? The water areas are called *oceans* or *seas*. Can you find the names of four oceans?

The globe is a model of the earth. It gives us a true picture of the continents and the oceans and seas. It shows us where

they are. It shows us which ones are big and which ones are small. It shows us what shape they are.

Find Canada on the globe. Find your province. It is quite small on the globe, isn't it? Now turn to the map on pages 30-31. This is a flat map of Canada. Canada is larger on the map than on the globe. Is its shape exactly the same as it is on the globe? Remember that no part of the globe can be flattened without some cutting or stretching or pushing together. No flat map can be exactly the same shape as the globe.

Latitude. You found that there is a continent called North America and one called South America. Let us see what *north* and *south* mean. Around the middle of the globe you will find a line called the *equator*. At the very top of the globe is a point called the *North Pole*. At the opposite end of the globe is a point called the *South Pole*. When we go toward the North Pole we are going north; when we go toward the South Pole we are going south. North America is the continent that is closer to the North Pole and South America is the continent that is closer to the South Pole.

You can see lines on the globe that go around the globe in the same way as the equator. Lines are said to be parallel when they go the same way and stay the same distance from each other. These lines on the globe are called *parallels of latitude*. *Latitude* means distance from the equator.

Put your finger on the first parallel north of the equator. Follow it around the globe until you come to a number. Now move your finger northward to the next parallel. You will find it has a number too. The equator is number 0. Each parallel of latitude has a number. You will likely find them numbered 0, 10, 20, 30, 40, 50, 60, 70, 80.

The numbers stand for degrees of latitude. Let us find out what this word *degree* means. A degree measures the amount of turning. As a foot measures distance, a pound measures weight, and hours measure time, so a degree measures turning. If the minute hand of a clock stands at twelve, and you turn it around the clock to twelve again, you have turned the hand through 360 degrees. If you turn it from twelve to six, you have turned it through 180 degrees. Since there are 360 degrees once around the clock and there are twelve hours, through how many degrees do you turn the hand in moving it from one hour to the next?

Now, instead of thinking of a flat circle like a clock face, think of a hollow glass ball. Inside the ball is an arm, one end of which is attached by some kind of frame to the very centre of the ball. The other end of the arm reaches out to the skin of the ball and is free to move. If the arm moves right around the inside of the ball once, through how many degrees does it turn? If it turns half way around, through how many degrees does it turn?

Let us go further and imagine the earth to be hollow, like our glass ball, with an arm 4000 miles long. The arm is attached to the centre of the earth, as in our ball. Imagine the arm to be pointing directly to the point that we call the North Pole. Now move the arm so that it points directly to the South Pole. Through how many degrees has it turned?

Turn it back only half way to the North Pole. Through how many degrees has it turned? Half way between the North and South Poles is a point that we call the equator. (An "equator" is anything that makes things equal.) The number of degrees north of the equator is exactly equal to the number of degrees south of the equator: ninety degrees.

One thing more: when the arm is pointing to the North Pole and you move it to the South Pole, it makes no difference whether you turn it to the right or to the left, toward you or away from you. It will always reach the South Pole, and it will always pass a point ninety degrees from either pole. The line formed by all the points that

are ninety degrees from the poles is called the equator.

To find the parallels of latitude we use the same method, but we start at the equator. We call the equator 0 degrees, and move the arm towards either pole. All the points that lie fifty degrees from the equator, we think of as one line, and we call that line the fiftieth parallel of latitude. The other parallels of latitude are found in the same way.

Anyone living at a point through which the fiftieth parallel of north latitude passes would be living fifty degrees north of the equator. Each of the numbers stands for degrees north or south of the equator. How many degrees north of the equator do you live?

When we speak of a parallel, we always tell whether it is north or south of the equator. We say that a place is 10 degrees north latitude. That tells us that it is at a distance of 10 degrees north of the equator. We write it 10° N. The little circle means degrees, and the N means north of the equator.

Peoples of the world. The two pictures at the top of page 17 were taken in two *grain*-producing *regions*. The first picture shows two Canadians using a combine on a farm near Lethbridge, Alberta. In the other picture a farmer in southeastern Australia is also using a combine.

The next two pictures were taken in *mixed farming* regions. There the farmers do not specialize in one *crop,* but grow many different kinds of crops. There, too, they raise many farm animals. In these two pictures you see *dairy cattle* eating grass or resting in the shade. The first of the two pictures was taken near Kingston, Ontario. The picture on the right was taken not far from Capetown in South Africa.

The picture on the left at the bottom of the page shows Canadians loading *hay* near Sackville, New Brunswick. The picture to the right of it shows two men making hay near the Wicklow Hills in Ireland. Both these regions have a moderate *climate* and plenty of rain.

In all the pictures you can understand what the people are doing and why. You understand what they are doing because you have learned how such work is done at home. Thus what you already know about geography becomes a tool to help you to understand other parts of the earth.

A name for the world around you. Each pair of pictures shows two places that have about the same natural environment. Your *environment* is everything around you that influences your way of living. It includes climate, *altitude*, *surface features*, and *soil*, plants and animals, bodies of water, and *mineral* resources. These make up your *natural environment*. Your environment also includes other people and the things they have made, from a piece of furniture in the house to a great dam that provides water for *irrigating* an entire river *valley*. These are called your *social environment*.

Environment influences the lives of people in two ways. First, it offers them opportunities to do certain things; and second, it keeps them from doing other things. If there is a bathing beach near you, you can go swimming, but you cannot go swimming unless a place to swim is part of your environment. A farmer cannot raise corn unless the climate is warm enough for corn. Coal can be mined only where there are *deposits* of coal.

Some environments offer a greater variety of opportunities than others. For example, a farmer whose natural environment includes a *frost-free season* six months long and a *rainfall* of 40 inches has a choice of many crops. One who lives in a region with a frost-free season of four months and only 20 inches of rain has much less choice.

The pictures on page 17 were chosen to show you that people who live in similar environments often do the same things. However, they do not always use their

environments in the same way. Even in the pictures you can see differences. As you continue reading this book, you will learn that sometimes people have quite different ways of living, although their natural environments are much alike. You will also learn that over wide areas made up of many regions and many kinds of environments the people have some of the same ways of living. Finding reasons for these likenesses and differences makes the study of geography interesting.

WHAT WE CAN LEARN FROM MAPS

If you turn this page and the pages that follow, you will see many maps. When you study maps, you are studying about the environments in which people live. All but one of the maps in this group show features of the natural environment. The one that does not is the population map. *Population* is a part of the social environment.

In this book you are going to study the environments of most of the people in the world, and you will start by studying some of the things you can read from maps.

GETTING ACQUAINTED WITH THE WORLD

1. Look through all the maps before you begin the exercises. The map on pages 2-3 is a map of the world. The map maker drew this map as if it were the surface of a globe peeled off and flattened out. It is cut through the oceans so that the land areas need not be stretched very much.

The maps on pages 8-15 show all the land areas in the *world*, but parts of the oceans were left out. This was done so that the maps could have a larger *scale*. You do not need the oceans to understand the information given on these maps. By comparing a continent on the *physical-political* map with the same continent on the rainfall map, you can see the difference in scale. When we talk of the scale of a map, we are talking of how many miles are represented by one inch on the map.

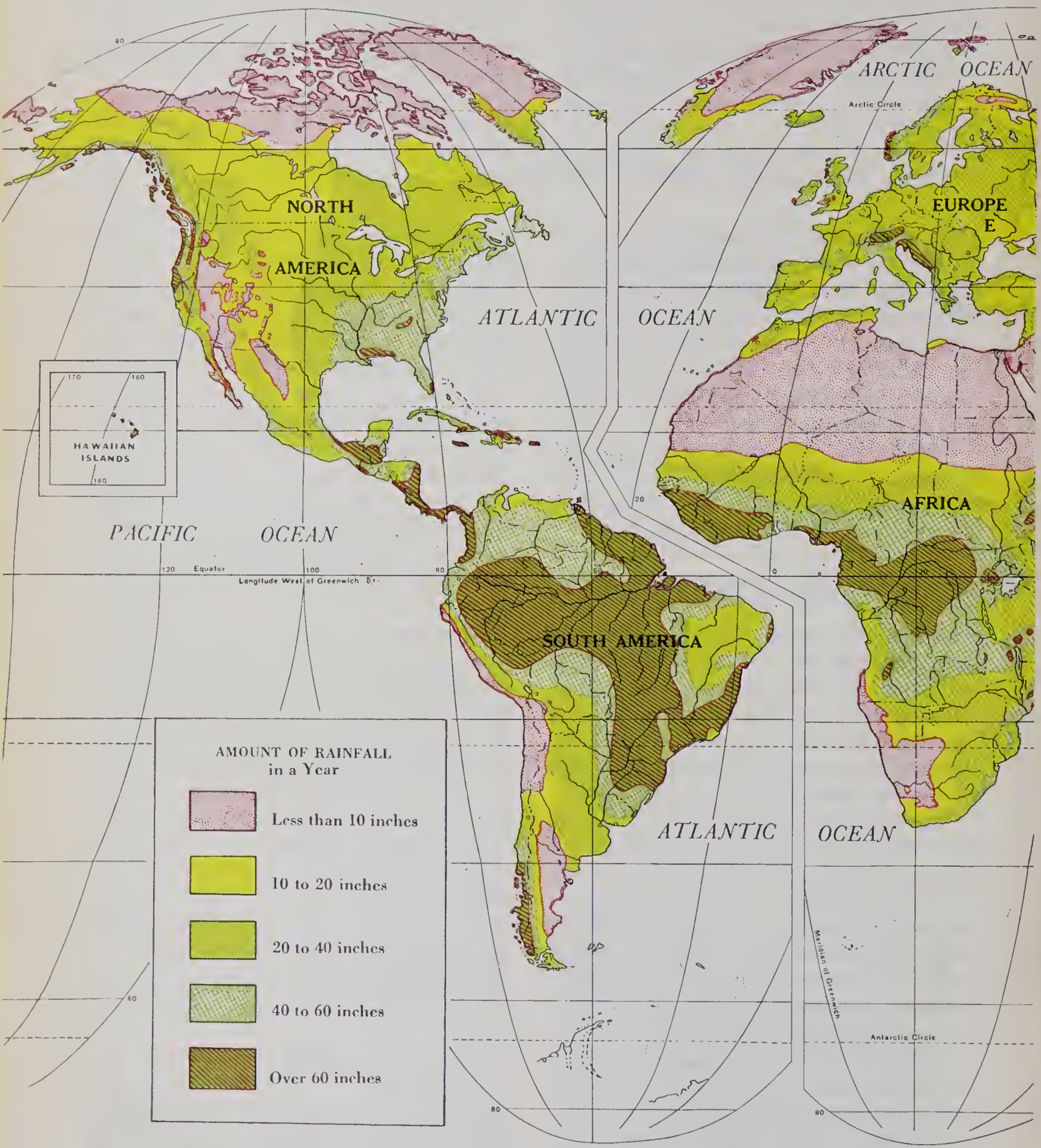
The rest of the two-page maps found throughout this book show parts of the earth on larger scales. There is a map of each continent except *Antarctica*. Since Antarctica has no people, we will not study it in detail. There is also a map of the Pacific Ocean, of Canada, of the United States, and of Middle America. To find these maps, look under "Maps" in the index.

2. The first thing you need to learn is how to recognize each continent when you see it on a map. How do you know your friends when you meet them on the street? You know them because they are familiar. You know just how they look. They may be so far away that you cannot see their faces. Still you know them. You will need to know all the continents as you know your friends. On the maps in this book you will see the continents in different colors, according to what the maps are showing, and later you will see parts of them in black and white. Sizes vary according to the scale of the map.

Even with all these differences, the continents are easy to recognize when you know them. To get better acquainted with them, you will need an *outline map* of the world. Print the name of each continent on the outline map. If you find one you do not know, check with the maps of the continents. After you have written "Europe" and "Asia" on these two continents, write "Eurasia" across both. Save your map to use later.

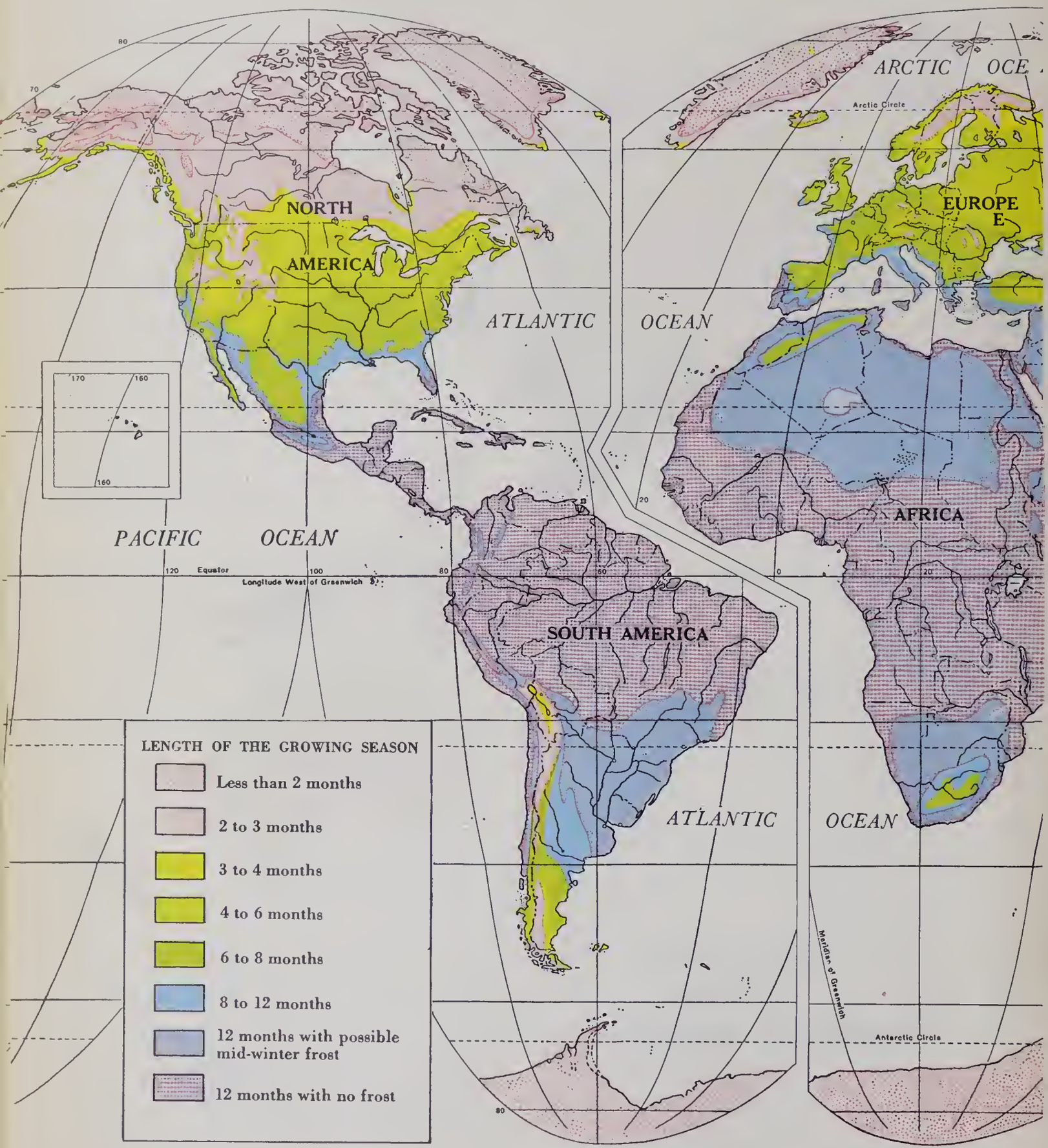
CAN YOU NAME THEM?

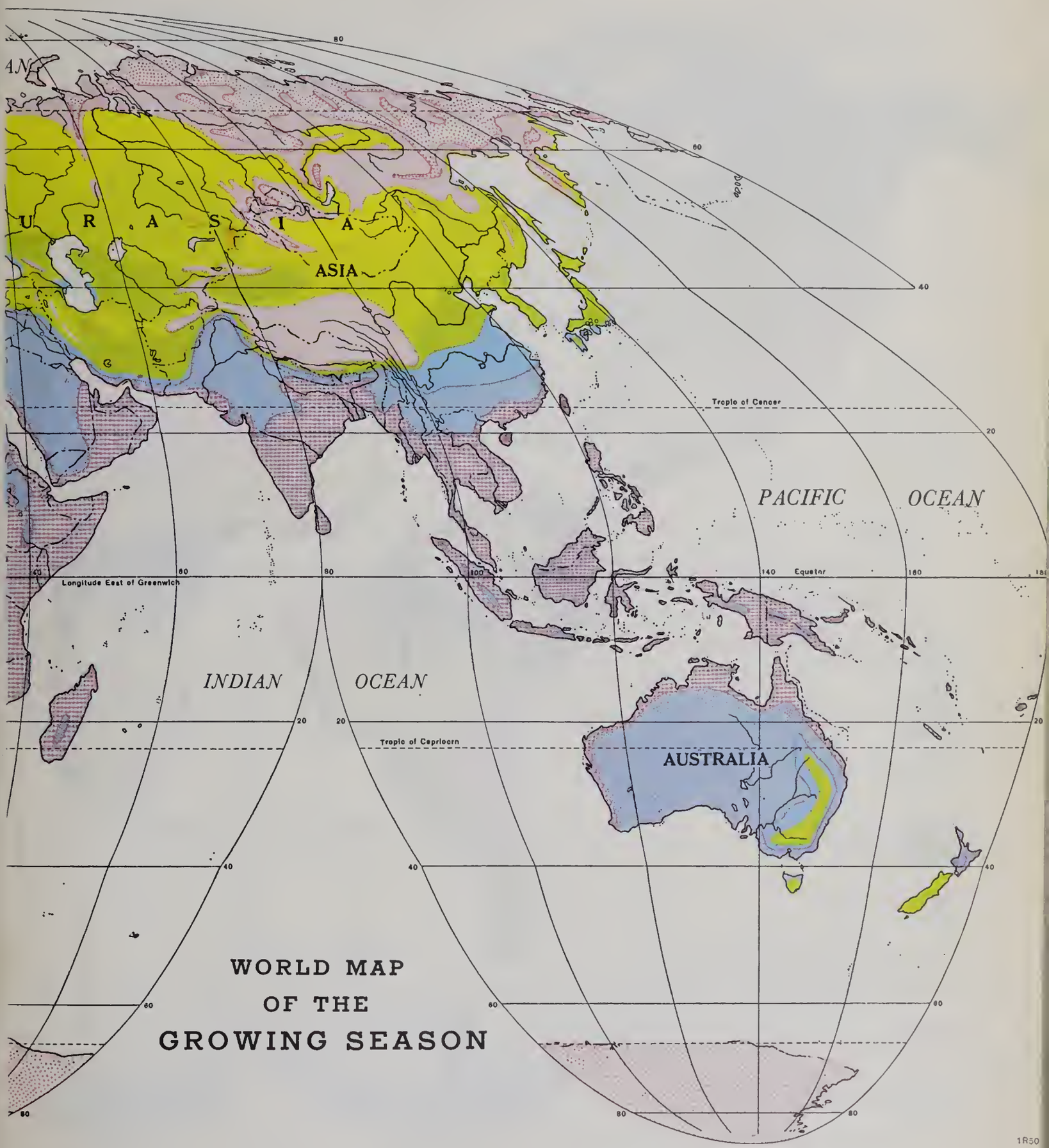
Make a list of the continents, according to the descriptions given on the following page. Use the map on pages 2-3 to help you.

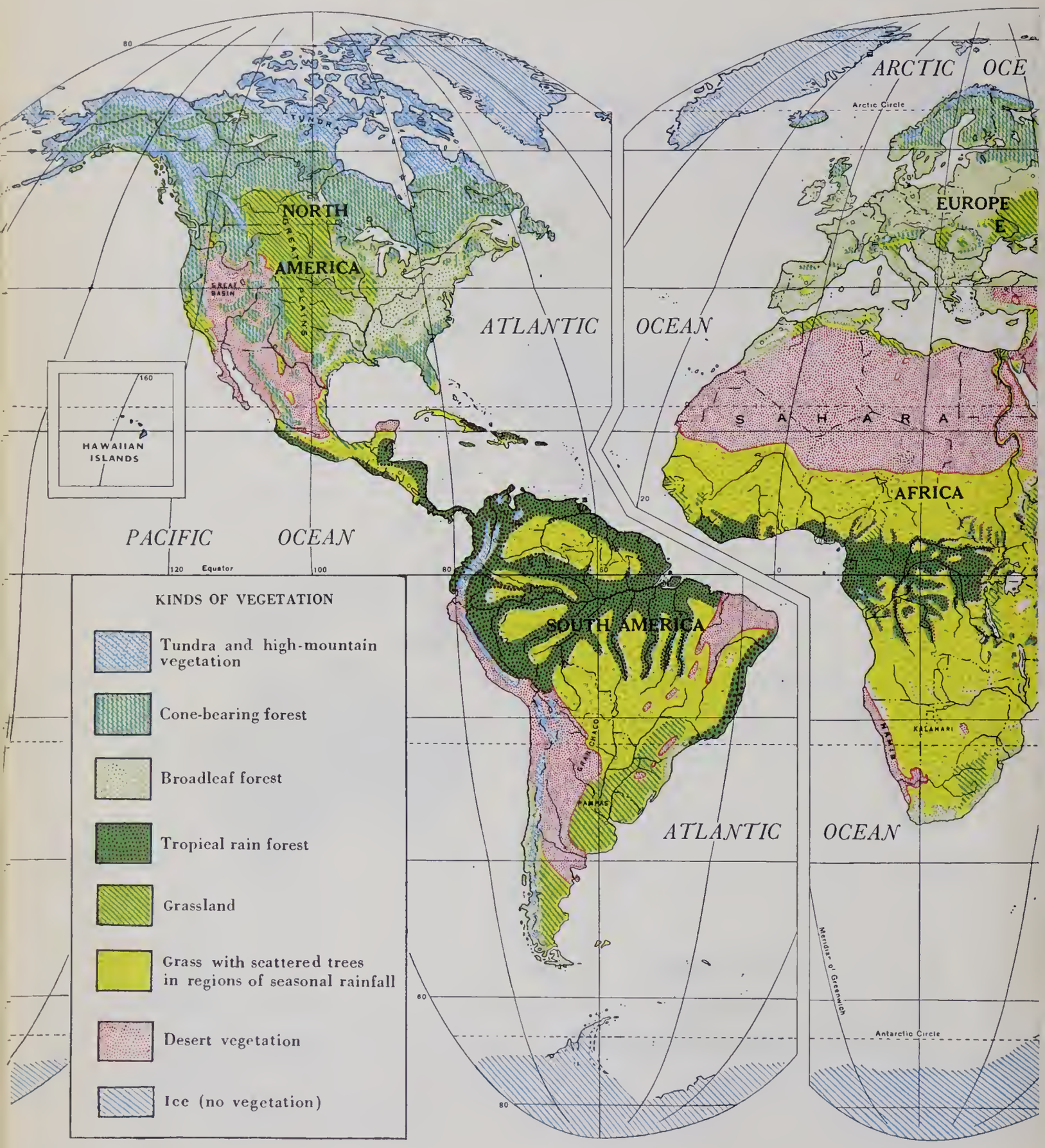

ARCTIC OCEAN
Arctic Circle
NORTH AMERICA
EUROPE
E
ATLANTIC OCEAN
HAWAIIAN ISLANDS
AFRICA
PACIFIC OCEAN
Equator
Longitude West of Greenwich
SOUTH AMERICA
ATLANTIC OCEAN
Meridian of Greenwich
Antarctic Circle
AMOUNT OF RAINFALL in a Year
Less than 10 inches
10 to 20 inches
20 to 40 inches
40 to 60 inches
Over 60 inches



WORLD MAP OF THE ANNUAL RAINFALL

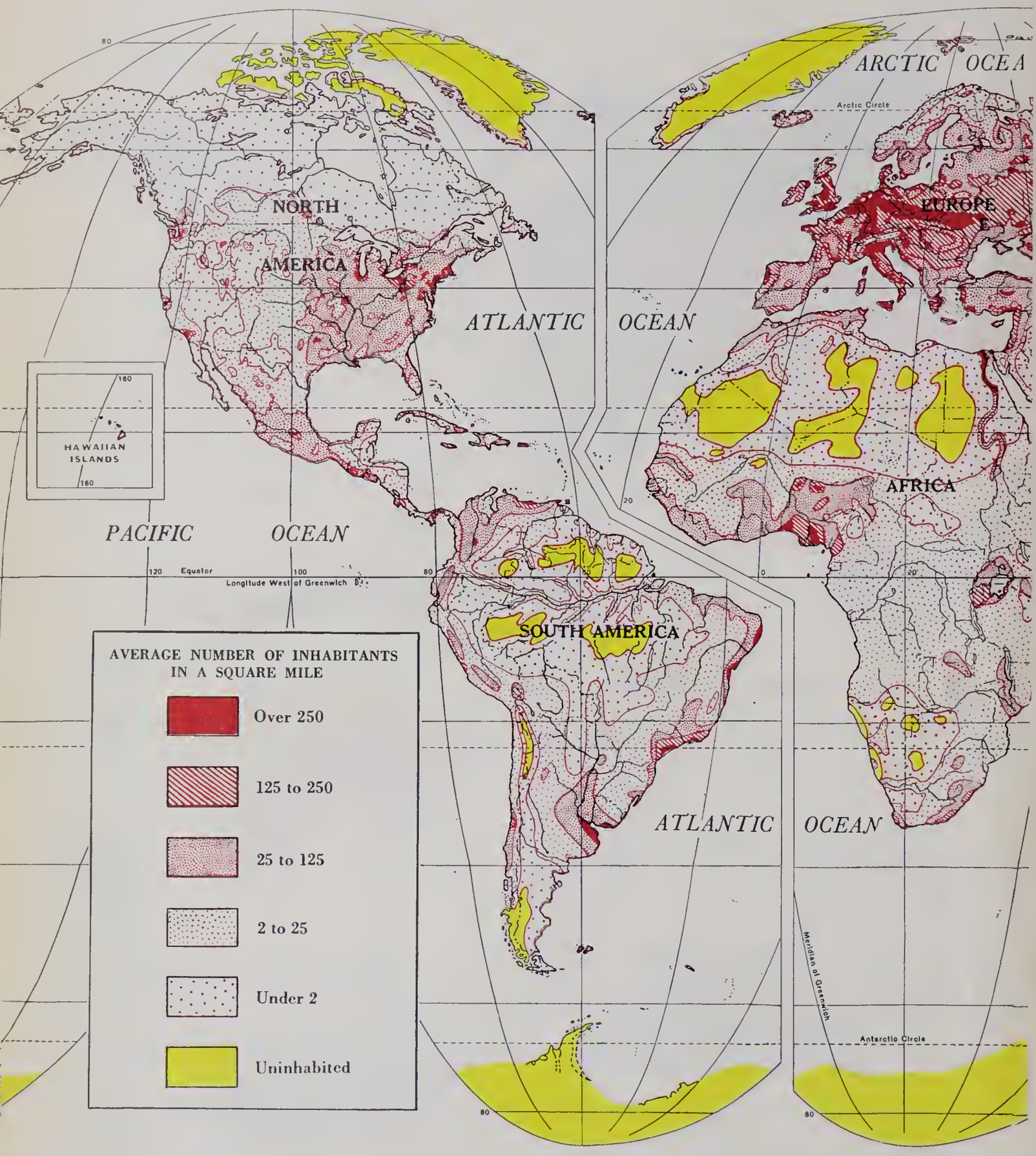

ARCTIC OCE
Arctic Circle
NORTH AMERICA
EUROPE
E
ATLANTIC OCEAN
AFRICA
PACIFIC OCEAN
Equator
Longitude West of Greenwich
SOUTH AMERICA
ATLANTIC OCEAN
Meridian of Greenwich
Antarctic Circle
LENGTH OF THE GROWING SEASON
Less than 2 months
2 to 3 months
3 to 4 months
4 to 6 months
6 to 8 months
8 to 12 months
12 months with possible mid-winter frost
12 months with no frost

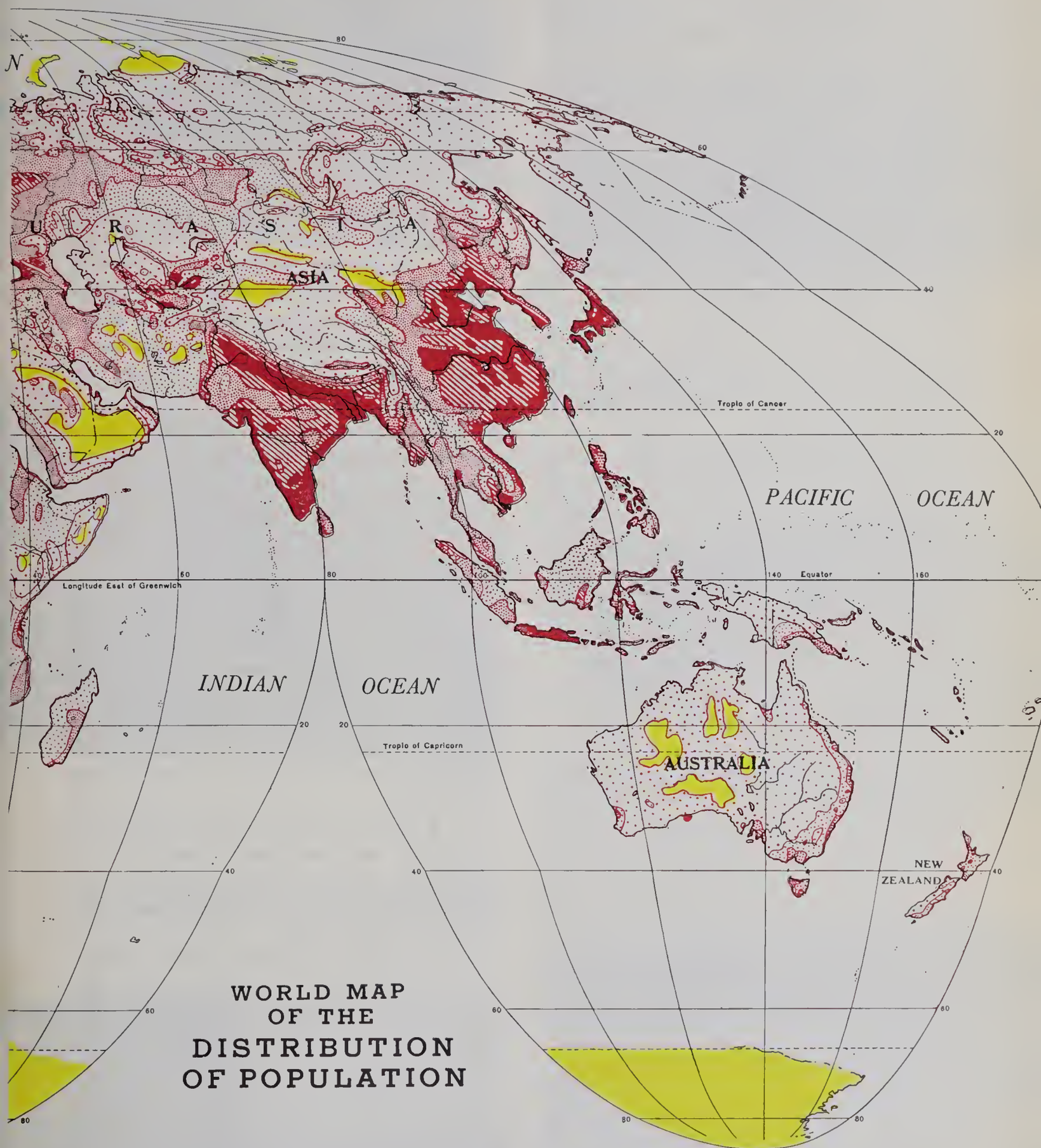

U R A S I A
ASIA
PACIFIC OCEAN
INDIAN OCEAN
AUSTRALIA
Tropic of Cancer
Tropic of Capricorn
Equator
Longitude East of Greenwich
WORLD MAP
OF THE
GROWING SEASON


ARCTIC OCE
Arctic Circle
TUNDRA
NORTH AMERICA
GREAT PLAINS
GREAT BASIN
EUROPE
E
ATLANTIC OCEAN
HAWAIIAN ISLANDS
160
S A H A R A
AFRICA
PACIFIC OCEAN
120
Equator
100
80
60
0
20
SOUTH AMERICA
GRAN CHACO
PAMPAS
KALAHARI
ATLANTIC OCEAN
Meridian of Greenwich
60
Antarctic Circle
80
KINDS OF VEGETATION
Tundra and high-mountain vegetation
Cone-bearing forest
Broadleaf forest
Tropical rain forest
Grassland
Grass with scattered trees in regions of seasonal rainfall
Desert vegetation
Ice (no vegetation)



WORLD MAP OF THE DISTRIBUTION OF VEGETATION


ARCTIC OCEA
Arctic Circle
NORTH AMERICA
EUROPE
ATLANTIC OCEAN
HAWAIIAN ISLANDS
160
160
AFRICA
PACIFIC OCEAN
120
Equator
100
80
Longitude West of Greenwich
0
20
SOUTH AMERICA
ATLANTIC OCEAN
Meridian of Greenwich
Antarctic Circle
80
80
AVERAGE NUMBER OF INHABITANTS IN A SQUARE MILE
Over 250
125 to 250
25 to 125
2 to 25
Under 2
Uninhabited



WORLD MAP OF THE DISTRIBUTION OF POPULATION

1. A continent that might be called a *peninsula* extending westward from another continent. It has *mountains* and seas to the south. On the north it reaches the *arctic regions.*

2. A continent crossed by the equator, with more land south of the equator than north of it. *Highlands* extend the entire length of the continent near the western *coast,* but much of the rest of the land is low. It is connected to another continent by a narrow neck of land.

3. The smallest continent. It is a continent entirely surrounded by water. It is entirely south of the equator.

4. The continent on which you live. It stretches from the arctic regions to the *tropics.* The highest land of this continent is in the western part.

5. A continent crossed by the equator, with more land north of the equator than south of it. Nearly all of the continent is more than 1000 feet high.

6. The largest continent. It stretches from north of the *Arctic Circle* almost to the equator. It has the world's largest area of land that is more than 10,000 feet above *sea level.*

YOUR HOME IN THE WORLD

1. On pages 30-31 you will find a map of Canada. On pages 22-23 is a map of North America, your home continent. Using the scale of miles on each map, measure the distance, in miles, across Canada at the parallel of 50° north latitude on these two maps and also on the world map on pages 2-3. About how great is the distance? Remember that you cannot expect to be completely accurate in measuring such a long distance on a map.

2. The map of Canada is drawn to a scale more than eight times as large as the scale of the world map. Prove this by comparing the size of Canada on both maps and also the number of miles to the inch found in the *keys.*

REGIONS TO FIND

You know something of the rainfall, *growing season, natural vegetation,* and population of our own country.

On pages 8-15 you have maps that tell you about the rainfall, growing season, natural vegetation, and population of the whole earth. These regions are shown by color symbols on the map.

The population map may be a new kind for you. The colors tell you the average number of people to the square mile. If 1000 people live in an area of 10 square miles, then the average is 100 people to the square mile. If 2600 live in an area of 10 square miles, the average is 260 to the square mile.

The game suggested below will help you to learn to read the maps quickly. You are to find the five areas described. One is in northern Canada, one is in western Canada, one is in central Canada, one is in eastern Canada, and one is outside Canada, though still on the North American continent.

1. A region with 20 to 40 inches of rainfall, having a growing season four to six months long, *broadleaf forest,* and up to 125 people per square mile.

2. A region with less than 10 inches of rainfall, a sixty-day growing season, *tundra vegetation,* and fewer than two people per square mile.

3. A region between 1000 and 2000 feet in altitude, with less than 20 inches of rainfall, three to four months without frost, *grassland* vegetation, and up to twenty-five people per square mile.

4. A region less than 1000 feet in altitude, with 40 to 60 inches of rainfall, not less than four months without frost, broadleaf forest, and from two to twenty-five people per square mile.

5. A region with more than 40 but less than 60 inches of rain, no frost at any time, *tropical forests,* and more than two but less than twenty-five people to the square mile.



The National Film Board

The twa regions pictured here are thausands of miles apart, but notice how much alike they are.



The Australian High Commissioner



The National Film Board

These two pictures were alsa taken in regians that are thausands of miles apart.



The High Commissioner for the Union of South Africa

One of these pictures was taken in New Brunswick; the other in Ireland. Try to decide which is which withaut looking at the credit lines.

The National Film Board



Embassy of Ireland



If you thought this game was fun, you can add to it by describing other regions on the earth for your classmates to find.

NORTH AND SOUTH

North and South America are connected by a long, narrow *isthmus*. It will help you to get an idea of the size of South America if you remember, as you look at the map, that Brazil is as large as Canada without the Yukon and British Columbia.

As you know, the equator crosses the northern part of South America. The part of the earth that is north of the equator is called the *northern hemisphere*. The half that is south of the equator is called the *southern hemisphere*. Any round object is called a sphere. The word hemisphere means half of a sphere.

This stone slip outside the Royal Observatory marks the exact location of the Greenwich Meridian.

Courtesy United Kingdom Information Services



1. You have learned that degrees of latitude are numbered north and south from the equator. About how many degrees north of the equator does South America extend? About how many degrees south of the equator does it extend?

2. Now turn to the map on pages 2-3. What other continent is crossed by the equator? What continent is entirely in the southern hemisphere?

3. Find South America on the rainfall map on pages 8-9. Is the rainfall light or heavy in *lowland* areas between the northern coast and the latitude of 30° south? How does it compare with rainfall in lowland regions farther from the equator? How does it compare with the rainfall in lowland regions near the equator in the other parts of the world?

You can never expect to find conditions exactly the same in two regions in different parts of the earth. Rainfall, for example, is influenced, not only by latitude, but also by altitude, wind directions, mountains, and distance from the ocean. You will learn more about the effects of such differences as you study the regions of the earth.

4. When you look at the growing-season map on pages 10-11, you see that latitude influences growing season even more than it influences rainfall. For example, you find a region with no frosts covering all northern South America except where there are high mountains. A belt of frost-free lands extends around the earth at the equator.

5. There are tropical forests along the Amazon River in South America. On the map on pages 12-13 find the color symbol that stands for these forests. Where else do you find this type of forest? Between what latitudes, north and south, are they? How much rain is there? What is the altitude of most of the forest regions? How long is the growing season? What does tropical mean?

If you compare maps, you will see that vegetation everywhere depends upon rainfall, growing season, and altitude. Rainfall and growing season are influenced by

altitude and latitude. In other words, rainfall, growing season, and *vegetation* depend upon one another, and all depend upon latitude and altitude.

DIRECTIONS ON THE MAP

On pages 304-305 is a map of Asia. Eurasia is the largest body of land in the world. It stretches halfway around the world. This large area is hard to show accurately on a flat map. The map maker drew the map of Asia as if he were looking at a globe with the North Pole tipped toward him.

1. Remember that north is always toward the North Pole. Starting in the middle of the map, move your finger straight toward the top of the page. In which direction are you going when you reach the uppermost edge of the map?
2. Find the city of Leningrad on the map. From it, move your finger straight south. The blue lines on the map run north and south. You can follow them. Which do you touch, the Black Sea, the Caspian Sea, or the Arctic Ocean?
3. If you flew north from the Sea of Okhotsk off the east coast of Asia, would you come to the Bering Sea, the Pacific Ocean, or the Arctic Ocean?
4. Which direction is the Arabian Sea from the Bay of Bengal? Which direction is the Black Sea from the Caspian Sea?
5. If you follow the right edge of the map, in which direction are you going when you come to the top of the map? In which direction are you going if you follow the left edge all the way to the top?

DISTANCE EAST AND WEST

One of the main purposes of measuring the earth in degrees of latitude is to help a person to figure out where on earth he is. However, if you were to say that you live on the 49th parallel of latitude, anyone setting out to find you might have to go right around the earth on the 49th parallel before he found you.

What you need, therefore, is a way of telling the exact point where you live on the 49th parallel. For example: if you were to tell a friend in Toronto that you would meet him on Bloor Street, he would have great difficulty in finding you. Bloor Street is several miles long. But if you were to say, "I will meet you on Bloor Street where Yonge Street crosses it," he could find you easily.

So, in the early days, sailors had to invent north and south "streets" in order to find their exact position on the earth.

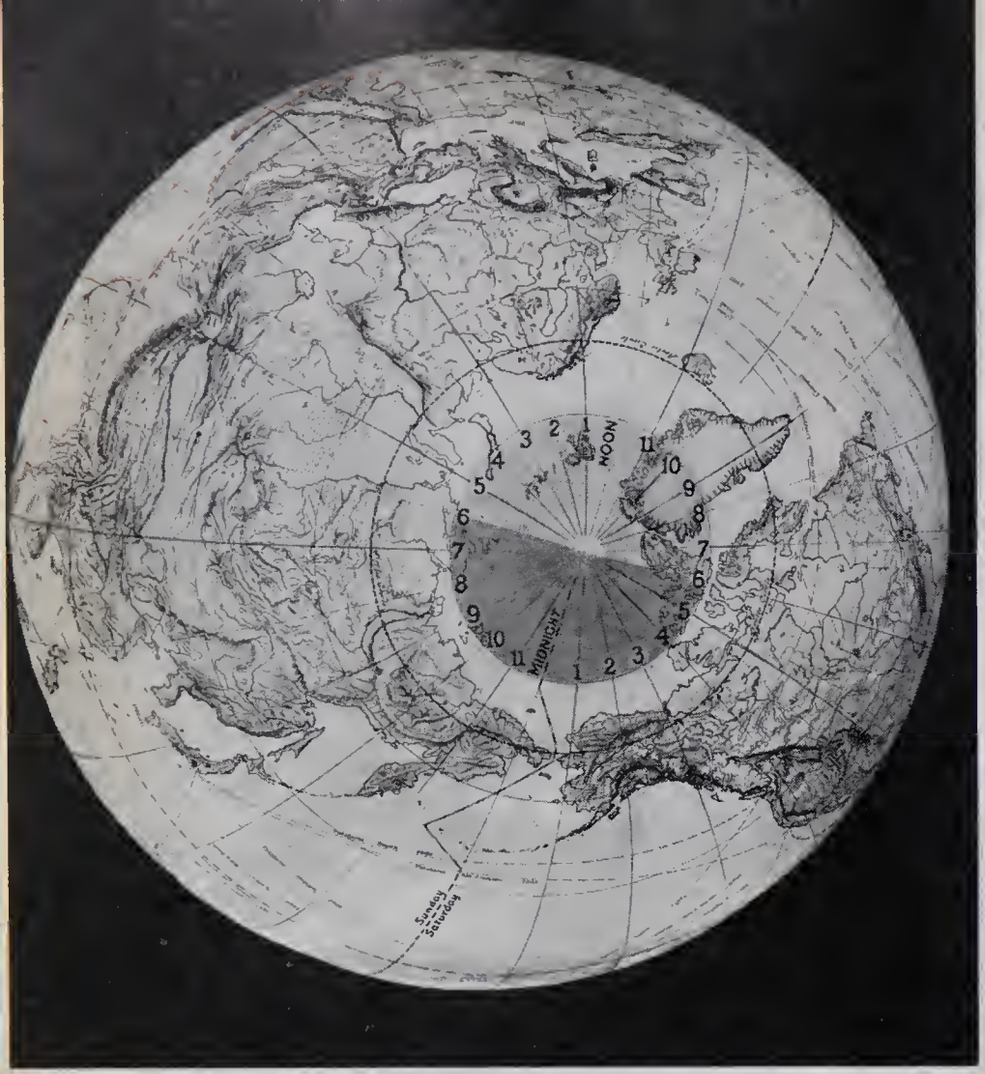
You know the name for the *east-west* location lines. Lines running north and south are called *meridians*. They may also be called lines of *longitude*. The meridians are the blue lines you followed in the last exercise when you went north and south.

Meridians or lines of longitude are measured in degrees just as lines of latitude are. The zero meridian is a line that runs through a place called Greenwich (pronounced "Grennich"), now a part of the great city of London. When it was decided which meridian was to be the zero meridian, Greenwich had the best observatory in the world, and so the meridian that ran through it was chosen.

Meridians are counted up to 180 degrees west and 180 degrees east. Why 180? Why do we stop at 180?

There are some things that we should notice about meridians. Take a globe and make the following observations:

1. The meridians all meet at the North Pole and at the South Pole. We might even define the poles as the two places where the meridians meet.
2. The lines on the globe that mark the meridians are farthest apart at the equator and come closer together as we trace them toward the north and toward the south. Do you know why the lines of longitude are closer together as we travel



The dial can be set to show what the time is at any meridian.

toward the poles? Think back to the glass ball with the moving arm inside that we used to help us to understand latitude. Move the arm so that the point goes completely around the inside of the ball at the equator. It has turned through 360 degrees.

Now turn the point of the arm up so that the point moves around the inside of the ball along a line along the 45th parallel of latitude. Again the point has moved through 360 degrees, but it has travelled only about half the distance.

Move the arm up again so that in going around it makes a little circle around the North Pole. That circle also has 360 degrees of turning, but the point travelled only a very small distance.

At the equator, therefore, if we were to make a mark on the ball for every ten degrees, the marks would be quite far apart. But near the poles if we make a mark on the ball for every ten degrees, the marks would be very close together.

3. Remember that the lines of longitude running from pole to pole measure degrees east and west. The parallels of latitude running around the earth the other way measure degrees north and south.

These two words "latitude" and "longitude" are extremely important. Latitude refers to width; longitude refers to length. How can we say that a ball has length and width?

The answer can be found in history. The ancient geographers thought that the earth was flat, and the flat piece of earth on which they lived seemed much longer east and west than it did north and south. Measurements that they made north and south, therefore, were measurements of the width of their world and were called measurements of latitude. Measurements that they made east and west were measurements of the length of their world and were called measurements of longitude.

WHERE ON EARTH ARE YOU?

1. On a globe find the meridian numbered 0°. The numbers are usually marked along the equator on a globe. Turn the globe halfway around. Now you are looking at the Pacific Ocean. The Americas are toward the east; Asia is toward the west. Southeast of Asia, a group of large *islands* and the continent of Australia almost cut off the Pacific from the Indian Ocean. At the north, Asia and North America almost meet. Far to the south lies the continent of Antarctica.

You can find all these things on the map of the world on pages 2-3, but you cannot

see the relationships on it as well as you can on a globe. On this map you cannot study the Pacific satisfactorily because it is cut almost through the middle. If you are not careful, you may find yourself thinking of the Pacific Ocean as consisting of two parts, one west of the Americas and the other east of Asia. Because you may sometimes need a flat map of the Pacific, there is one on pages 390-391.

2. Find the equator on the map on pages 2-3. What large islands does it cross? Is Australia in the northern hemisphere or in the southern hemisphere? How far does the continent of Australia extend from north to south, in degrees of latitude? How far does it extend east and west, in degrees of longitude? Australia is in east longitude. You can tell this because the numbers grow larger toward the east. Now look at the numbers and tell whether New Zealand is in east or west longitude.

3. Find the island of New Zealand on the map of the Pacific, pages 390-391. Just east of New Zealand find the meridian numbered 180°. If you look still farther toward the east, you will find that the next number is 170°, and the next after that is 160°. You are now looking at the part of the map that is in west longitude, where the numbers grow larger toward the west.

The meridian of 180° is neither east longitude nor west longitude. It is the line where east and west longitude meet. This meridian is exactly halfway around the earth from the meridian numbered 0°. On a globe you can see very clearly why this is true. The whole distance around the earth is 360 degrees. Since degrees of longitude are numbered east and west from 0, they must meet halfway around the earth. Half of 360 is 180.

4. You know that parallels and meridians are used to find locations. The navigator of a ship or an airplane learns where he is by finding his latitude north or south and his longitude east or west. Suppose, for example, that you are in an airplane flying towards Australia. You see land beneath you and wonder what it is. You have instruments that tell you that your latitude is 10° south and your longitude is 150° east. A glance at the map on pages 390-391 tells you that the land is the eastern end of the island of New Guinea. If you were at 10° north and 130° east, what would be the nearest land?

FINDING LATITUDE AND LONGITUDE

To find latitude, you need an instrument that tells you the height of the noonday sun in the sky. It is directly overhead at the equator on September 23 and March 21. On June 22 it is directly overhead at the *Tropic of Cancer;* on December 22 it is directly overhead at the *Tropic of Capricorn.* The Tropic of Cancer and the Tropic of Capricorn are names given to two parallels of latitude. The Tropic of Cancer is the parallel north of the equator beyond which the sun never shines straight down. The Tropic of Capricorn is the name of the same parallel south of the equator. How many degrees north and south of the equator do they lie? On every day in the year the noonday sun is directly overhead somewhere between the two tropics. A navigator has a book that tells him where the noonday sun is directly overhead on each day in the year. Suppose he finds from his book that on this day the sun is directly overhead 20° north of the equator. His instruments tell him that he is 10° north of the place where the sun is directly overhead. He knows now that he must be at 30° north latitude.

Finding longitude is almost as simple. It depends upon having a very accurate clock, for longitude is found by means of time. The scientists at the Greenwich Observatory can tell the time exactly by the sun. Every navigator carries an accurate timepiece set always to show Greenwich time. He can also get Greenwich time by radio. He has instruments to tell him the sun time where he is,


North Pole
Polar Ice Pack
Arctic Ocean
ASIA
GREENLAND
Ice Cap
ICELAND
Point Barrow
Bering Sea
Thule
Baffin Bay
BAFFIN ISLAND
Godthaab
Cape Farewell
ALASKA
Yukon River
Mount McKinley
Fairbanks
Anchorage
Mackenzie River
Arctic Circle
Great Bear Lake
Great Slave Lake
Juneau
Ketchikan
ROCKY MOUNTAINS
CANADA
Hudson Bay
Churchill
Edmonton
Calgary
Vancouver
Lake Winnipeg
Winnipeg
Seattle
Portland
Columbia River
Missouri
Fort William
Duluth
Great Lakes
Quebec
St. Lawrence River
Montreal
Ottawa
Halifax
Boston
St. John's
Pacific Ocean
Atlantic Ocean
70°
80°
180°
160°
140°
120°
100°
80°
20°
40°
60°
50°


NORTH AMERICA
Scale of Miles
100 200 400 600
National Capitals ☆ Colonial Capitals • Other Cities
Shading from green through yellow, brown, and red indicates increase in altitude. Figures show approximate altitude in feet for corresponding color.
10,000 ft.
5,000 ft.
2,000 ft.
1,000 ft.
500 ft.
UNITED STATES
MEXICO
Pacific Ocean
Atlantic Ocean
Gulf of Mexico
Caribbean Sea
WEST INDIES
CENTRAL AMERICA
SOUTH AMERICA
Cape Mendocino
San Francisco
Los Angeles
Salt Lake City
Denver
Phoenix
El Paso
Dallas
Houston
New Orleans
Kansas City
Omaha
Chicago
Minneapolis
Milwaukee
Detroit
Toronto
Cleveland
Cincinnati
St. Louis
Atlanta
Washington
New York
Philadelphia
Miami
Havana
Cape Hatteras
Cape San Lucas
Mexico City
Veracruz
Guatemala
Panama
Colorado River
Rio Grande
Ohio River
Mississippi River
APPALACHIAN MOUNTAINS
BERMUDA
Tropic of Cancer
Tropic of Cancer
Equator
Equator
30°
20°
10°
0°
120°
110°
100°
West Longitude
90°
80°
North Latitude
30°
20°
10°
0°

and from the difference in time he figures out the longitude.

You know that time is not the same all the way around the earth. The time you hear on the radio is not always the time shown by your clock. The earth turns steadily toward the east. It turns all the way around each day. In twenty-four hours' time it turns through 360 degrees of longitude. If you work the problem in division, you will find that it turns through fifteen degrees each hour. For every fifteen degrees, then, there is an hour's difference in time. Because the world turns toward the east, it is an hour later 15° to the east, and an hour earlier 15° to the west. When it is noon in Greenwich, it is one o'clock at 15° east, two o'clock at 30° east, three o'clock at 45° east, six o'clock at 90° east, and midnight at 180°, halfway around the earth. West of Greenwich, time goes the other way. When it is noon in Greenwich, it is eleven o'clock at 15° west, 6:00 A.M. at 90° west, and so on. Either way, it is midnight at 180° when it is noon at 0°.

If our navigator finds that it is noon by the sun when it is 3:00 P.M. in Greenwich, as shown by his timepiece, he knows there is a difference of three hours' time. This means a difference of 45° longitude. Since Greenwich has later time, he must be at 45° west longitude. His exact location is 30° north latitude and 45° west longitude. Find this place on your globe.

HOW REGIONS OF THE WORLD ARE RELATED

In this book you will study the world region by region. You know that there are many different kinds of regions. On the map on pages 2-3, you can pick out highland regions and lowland regions, coastal regions and inland regions. When you look at the map on pages 8-9, you see that the world can be divided into regions according to rainfall. The growing-season map on pages 10-11 shows regions, and so does the vegetation map on pages 12-13. You cannot draw a line around an area on the map and say, "This is a region." You must also tell the kind of region you mean.

What is a region? Altitude, nearness to the ocean, rainfall, and growing season are all features of the natural environment. You know that these features are related to one another. You have learned, for example, that some tropical lowlands are rainy, and that some highlands have a shorter growing season than lowlands in the same latitude. If you were to study the maps very carefully, you might see many such relationships. You might be able to divide the earth into regions based on a combination of natural features. You may have heard of such regions. They are called hot wet lands, hot dry lands, and so on.

Natural and social regions. Look first at the lowlands in the low latitudes. When we speak of *low latitudes,* we mean the latitudes with low numbers. In other words, lands in the low latitudes are lands near the equator. *High latitudes* are those that have high numbers. They are the *polar regions.* The lands between are in the *middle latitudes.* These are convenient terms to use when you are making general statements about the earth. You cannot say that any certain parallels are boundaries between the low, middle, and high latitudes.

Low-latitude lands that are not very high above sea level are usually hot and rainy. Most of these hot wet lands are covered with tropical forests. Hot dry lands have *desert vegetation.* Most fairly rainy middle-latitude lands were once covered with forests. Drier middle-latitude areas are usually grasslands. When you wish to study regions based on



A pole-centred map of the world showing the main air routes.

the natural environment, the vegetation map is your best guide.

Differences in social environment also divide the earth into regions. You can see this on the population map on pages 14-15. On it you see regions of sparse population and regions of dense population. You will learn later that there are regions in which a special kind of work is important, regions set off by ways of living and in various other ways that have to do with people rather than with the natural environment.

The natural environment influences people and the things they do. Sometimes we can see the influence best by studying what people did in the past, for people have now learned to change and control their environments to some extent. For example, in western Canada and the western United States there are hundreds of square miles of







crop land where *cattle* once grazed on the grass that made up the natural vegetation. These lands have not enough rain for the crops now grown on them, but by means of irrigation, people have given the soil enough moisture for farming. Long ago, people everywhere depended only upon the building materials found in their own region. In a region with plenty of *timber*, most houses were made of wood; in a region with good clay for bricks, most people lived in brick houses; in regions with easily worked building stone, stone houses were common. Now, in regions that have good *transportation*, people can get any kind of building material they want.

Sometimes we say this in another way. We say that people have enlarged their environment so that whatever affects people anywhere becomes part of their environment. The regions that produce *lumber* for your furniture, wool for your clothes, wheat for your bread, and the orange you had for breakfast, all become part of your environment, even though these regions are far away. The valuable *resources* found in one part of the earth may be used as *raw materials* in a factory halfway around the world. There they may be combined with raw materials from a dozen other regions, and the *finished products* may be sold in all the six continents on which people live. Thus, ways of living have become much the same over large areas in different regions.

How to study regions. As you study each region think about three things:

1. The natural environment.
2. The social environment. This includes *density of population;* where the people live; the work they do; the things they have built or made, such as houses, factories, roads, railways, *canals,* and *dams.*

Ewing Galloway — American Can Co. — Dole Pineapple Co.

Materials are sometimes shipped around the world. Here you see tin being mined by Malays, made into cans in the United States, and packed with pineapple in Hawaii for shipment to many countries.

3. The relation of the region to the world as a whole.

The social environment of a region is related to the natural environment. The work people do and their ways of living depend partly upon climate, surface features, and *natural resources.* They depend also upon the skill and knowledge of the people themselves. Ways of living in every region depend partly upon the environment, partly upon the past history of the people who live there. You know, for example, that when Europeans settled in America they brought their ways of living with them. They did not live as the Indians did.

The way in which a region is related to the world as a whole depends partly upon natural environment, partly upon past history, partly upon the kind of government and the amount of money the people have.

Regions related in environment. In your map studies you learn about rainfall, growing seasons, and vegetation over the whole earth. For example, there is a belt of *cone-bearing trees* extending around the earth between 50° and 70° north latitude. The forest is there because of the climate. These regions all have the same kind of natural vegetation and much the same kind of climate. That is, they have much the same kind of natural environment.

Regions related by their use. Other relationships between regions depend upon what has happened in the past. We may use the cone-bearing forest belt again as an example. In some regions within the forest belt, the land was cleared many years ago by pioneers who needed fields for their crops. In other regions lumbering was carried on because people needed the lumber. In parts of the forest in Canada, the Indians hunted animals for fur. They would not have done this if people from other parts of the world had not built trading posts where they could sell the furs. Where the cone-bearing forest belt is used for farming, it now seems much the same as areas in the broadleaf forest region that are used for farming. Most of the lumber goes to more densely populated regions. The furs from the northern forest also go to other regions for sale. Thus the things people have done in the past have changed this northern forest belt. The work people do there now is closely related to the work people do in other regions.

Almost everywhere in the world such things have happened. People have widened their own environment by reaching out to other parts of the earth for food, for raw materials for their factories, and for building materials for their houses. In this way regions have become related to one another. The people of one region depend upon other regions to supply them with many things they need, and to buy from them the things which they in turn produce. To understand what people do today, therefore, you need to know some of the things that people have done in the past.

THE GEOGRAPHY WORKSHOP

I. THE WORLD IN YOUR COMMUNITY

Your *community* has many relationships with the rest of the world, and the whole world will seem closer to you when you learn about such relationships. Your study of your own community will help you to understand many things that are true everywhere. For example, it is true that farmers everywhere must choose their crops according to the natural environment of their region. If you know why farmers in your own region grow the crops they do, you will find it easier to understand farming in



Kaufmann & Fabry Co.



Harold M. Lambert

What do you do in the winter, play in the snow or go swimming? It all depends on where you live.

other parts of the earth. In most Geography Workshops you will find suggestions to guide you in relating your community to the land you are studying.

In the class study of your community, one group may work on the social environment, and another group on the natural environment. The study will mean more to you if you carry it on throughout the whole year.

The group working on the social environment will collect information on the number of people in your community, where they live, and the things they have built or made.

Making a map of your community is a good way to record your information. In drawing the map, you may use road maps, railway maps, and any other maps that are helpful. Your map should show where people live, where the stores are located, the main streets and roads, the railways, canals, and other means of transportation. It should also include important factories and other *industries.* Members of other groups can help you by telling you what they would like to have you put on the map. They also will want to consult your map as a guide in their own work.

The group working on the natural environment may use the following questions to guide their study:

1. What is the altitude of your community? Is it near bodies of water? Is the land level, *hilly,* or mountainous?

2. How much rain falls in a year? Start with the map that is on pages 8-9. You can get further information from the nearest Weather Bureau station, or perhaps from the office of your local newspaper. You might enjoy trying to measure the rainfall yourself.

3. What is the length of the frost-free season in your community? You may find that someone has kept an exact record of the dates of latest and earliest frost. If not, many people can tell you when frost may be expected.

4. What was the natural vegetation? You will be able to find many wild plants, but not all of them belong to the natural vegetation of your region. Some of them have escaped from gardens. Others have been brought accidentally from other regions. Thus you will have to try to find out which plants grew in your region before the first European settlers came.

II. INFLUENCES ON YOUR ENVIRONMENT

The class may work together on this exercise. List five objects in your classroom whose origin you can find. For example, if you choose your textbook as one of the objects, the title page tells you where it was made.

The objects you have listed are part of your environment. How many of them were made in your own town or your own region? How many came from other regions? Locate on a map the places in which they were made. From your study of these objects, what other regions, would you say, have had some influence on the environment of your classroom?

III. REGIONS YOU SHOULD KNOW

Locate your own home on the map of Canada, pages 30-31. Then on your outline map of the world place a large colored dot to stand for your home. Use the maps on pages 8-15 to find the following information about the surrounding region. As shown by the maps, what is the altitude of the region around your home? How long is the frost-free season? What is the yearly rainfall? What was the natural vegetation in your region?

Now find other parts of the earth in which, according to the maps, conditions are about the same as in the region around your own home. Outline them as well as you can and color them to match the dot you used to show your home.

On what continents do you find regions like your own? Are the latitudes all the same? Are there any in the southern hemisphere? Is the density of population the same in all of them? Do the people in these regions earn their living in much the same way? In what countries are these regions found? How many of these regions are there?

Save your map to use as you study the regions of the earth. Whenever you come to a region marked on your map, study it carefully and compare it with your own home region. Do people do any of the same kinds of work as in your own region? Do they have the same kinds of homes? How does the transportation compare? Has one any resources, such as minerals or *water power,* that are lacking in the other? Make other comparisons that seem important to you. Try to explain any differences you find in the density of population and in the way people live and work.

IV. WHERE DO PEOPLE LIVE?

In the following sentences, you are to choose the correct expression from those you find enclosed in brackets. In making your choice use the maps and what you have read. Sometimes you can use more than one expression to make the sentence correct.

The exercise will be more interesting if the class works together on it. After you have agreed on the right words for each sentence, try to find at least one reason why the sentence is correct. Suppose, for example, a sentence said that *desert* areas are sparsely populated. You might say "Deserts are sparsely populated because they do not have enough rain for farming."

1. Most of the densely populated regions of the world are (in highlands, on lowlands).
2. Most of the people in the world live in the (northern hemisphere, southern hemisphere).
3. There are no areas of dense population (in the southern hemisphere, in the polar regions, within 20° of the equator, where the rainfall is over 60 inches).
4. All large, densely populated regions of the world have (less than 10, more than 20, more than 60) inches of rain in a year.
5. In most of the areas of very dense population, the natural vegetation was (grassland, broadleaf forest, desert vegetation, cone-bearing forest).


150°
140°
130°
120°
110°
100°
90°
80°
Polar Ice Pack
Beaufort Sea
North Magnetic Pole
ALASKA
Yukon
70°
Fairbanks
Aklavik
Dawson
VICTORIA ISLAND
NORTHWEST TERRI
Mackenzie River
Great Bear Lake
Port Radium
Arctic Circle
YUKON
Mount Logan
60°
Whitehorse
Juneau
Yellowknife
Great Slave Lake
Slave River
Ketchikan
Prince Rupert
Ft. Vermilion
Peace River
Lake Athabasca
Athabasca River
Churchill
Churchill River
Nelson River
BRITISH COLUMBIA
ALBERTA
SASKATCHEWAN
MANITOBA
Edmonton
North Saskatchewan River
Lake Winnipeg
Lake Winnipegosis
Saskatoon
Calgary
South Saskatchewan R.
Regina
Lake Manitoba
Winnipeg
Lake of the Woods
VANCOUVER ISLAND
Victoria
Vancouver
Fraser River
Columbia River
Seattle
Portland
Missouri River
Red River
Duluth
Minneapolis
Saint Paul
50°
45°
40°
120°
115°
110°
105° West Longitude 100°
95°
Pacific Ocean
UNITED STATES


CANADA
Scale of Miles
0 100 200 300
National Capitals ☆ Provincial Capitals • Other Cities
Shading from green through yellow, brown, and red indicates increase in altitude. Figures show approximate altitude in feet for corresponding color.
10,000 ft.
5,000 ft.
2,000 ft.
1,000 ft.
500 ft.
70° 60° 50° 40° 30°
55° 50° 45° 40°
North Latitude
90° 85° 80° 75° 70° 65°
Baffin Bay
Davis Strait
GREENLAND (Den.)
Godhavn
BAFFIN ISLAND
Foxe Basin
Hudson Strait
James Bay
Hudson Bay
NEWFOUNDLAND
LABRADOR HIGHLAND
UNGAVA PENINSULA
QUEBEC
Hopedale
ISLAND OF NEWFOUNDLAND
St. John's
Gulf of St. Lawrence
St. Lawrence River
PRINCE EDWARD ISLAND
Charlottetown
Sydney
NEW BRUNSWICK
Fredericton
Saint John
NOVA SCOTIA
Halifax
Chicoutimi
Quebec
Timmins
Lake Nipigon
Port Arthur
Fort William
Lake Superior
Sudbury
Sault Ste. Marie
Montreal
Ottawa
APPALACHIAN MOUNTAINS
Boston
New York
Lake Huron
Lake Ontario
Toronto
Hamilton
Lake Michigan
Detroit
Windsor
Lake Erie
Atlantic Ocean
31



CANADA

Boys and girls in the United States study the geography of Canada, but since they do not need to know as much about our country as we do, they study it as one big region. They learn things like: we get most of our *newsprint* paper from Canada; it is cold in northern Canada.

We who live in Canada need to know many things about our country. Why? Make a list of five reasons why we should know Canada thoroughly.

To study a large land thoroughly, the land should be divided into regions, and we should study one region at a time. This we shall begin to do on the next page.

Study the pictures on page 34 carefully. Each photograph was taken in a region of Canada. After you have read this section try to decide which picture belongs to which region. There is only one photograph to illustrate the St. Lawrence Valley-Lake Peninsula region.

We have said that Canada is a big country. How big is it? On page 16, you were asked to measure the distance across Canada from east to west. What was it? Now, using the scale, measure the distance from the most southerly point of Canada to the most northerly point. How many miles is it from south to north? Look at a map of the world and find the countries that are bigger.

In this big country of ours live over 16,000,000 Canadians. When you consider that India has a population of over

350,000,000, you can see that we have room to grow.

Our 16,000,000 people do many kinds of work. The industries that we count on most are those that give us our food and raw materials. These industries are mainly farming, lumbering, fishing, and mining. Many people work in factories *manufacturing* things from the raw materials. Many others are engaged in distributing goods. Others are in the professions — doctors, teachers, engineers, and others — and still others perform services of many kinds — dry-cleaning, road-repair, cooking and serving meals — the many, many things that people need to have done for them.

All of this work that we Canadians do has one big result. It uses our natural environment to help us to make changes in our social environment. From our natural environment, for example, we draw coal and iron and *limestone*. These make steel. From the steel we make actually thousands of things that change our social environment — stoves, automobiles, knives, and so on.

In learning about Canada, we shall study mainly these two things: our natural environment, and the ways in which we use our natural environment to change and improve our social environment.

To help us to make this study we shall divide Canada into seven sections, and study each section separately. Each section we shall call a region. As you learned on page 24, there are numbers of reasons for deciding the *boundaries* of a region. We shall use the natural environment, mainly, to help us to break up Canada into regions.

If you were telling a stranger about Canada, you would probably tell him of the regions of Canada almost as we are going to study them. You would say: "In the west are the mountains. Then come the *prairies*. East of the prairies is a long stretch of rock and *lakes* and trees that reaches all the way to southern Ontario. East of that again there is good farming land along the St. Lawrence River. After that you come to the provinces on the Atlantic Ocean. And finally (I almost forgot), there is the North."

In that description you have named quite accurately the seven regions that we are going to study.

We shall not study the regions in the same order as in your description. Instead we shall take them up in this order: (1) the *Atlantic Provinces;* (2) the Rock Country; (3) the St. Lawrence River Valley; (4) southern Ontario, which we shall call the Lake Peninsula; (5) the Central Plains, which you call the prairies; (6) the mountains; (7) the North.

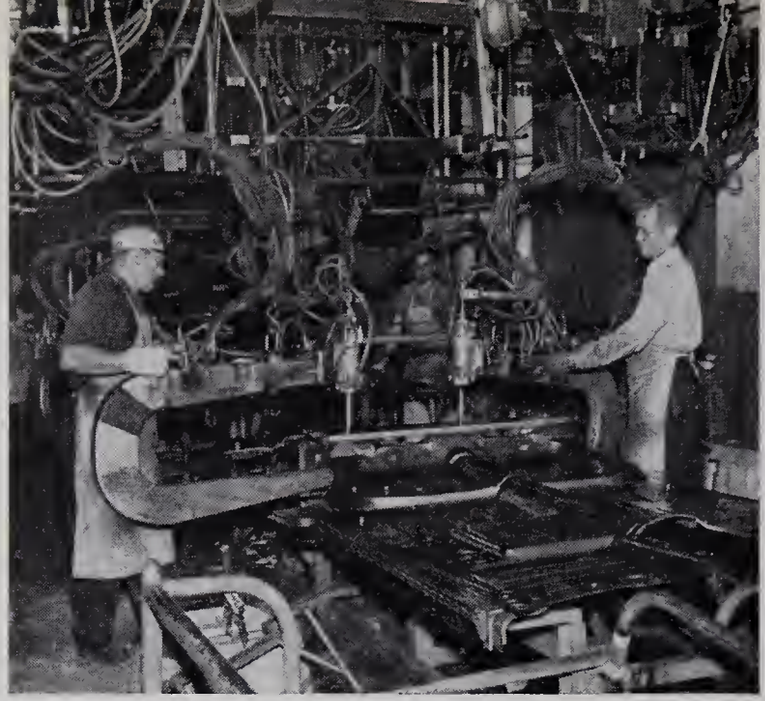
THE REGIONS OF CANADA

THE ATLANTIC PROVINCES

The Atlantic Provinces region consists of the Gaspé Peninsula in Quebec, the provinces of New Brunswick, Nova Scotia, and Prince Edward Island, and the island part of Newfoundland. The Labrador part of Newfoundland is in the Rock Country. Most of this region, except Prince Edward Island, is an extension of the Appalachian *mountain range,* but the mountains are not as high or as rugged as they are farther south, in the United States. Instead, they are gently rounded. Most of the land in the Atlantic Provinces is wooded. Prince Edward Island is an exception.

Off the coast of the Atlantic Provinces, there are a number of shallow places in the ocean called *banks*. Fish come there to feed, and the fishermen can catch them more easily on the banks than in the deeper parts of the ocean.



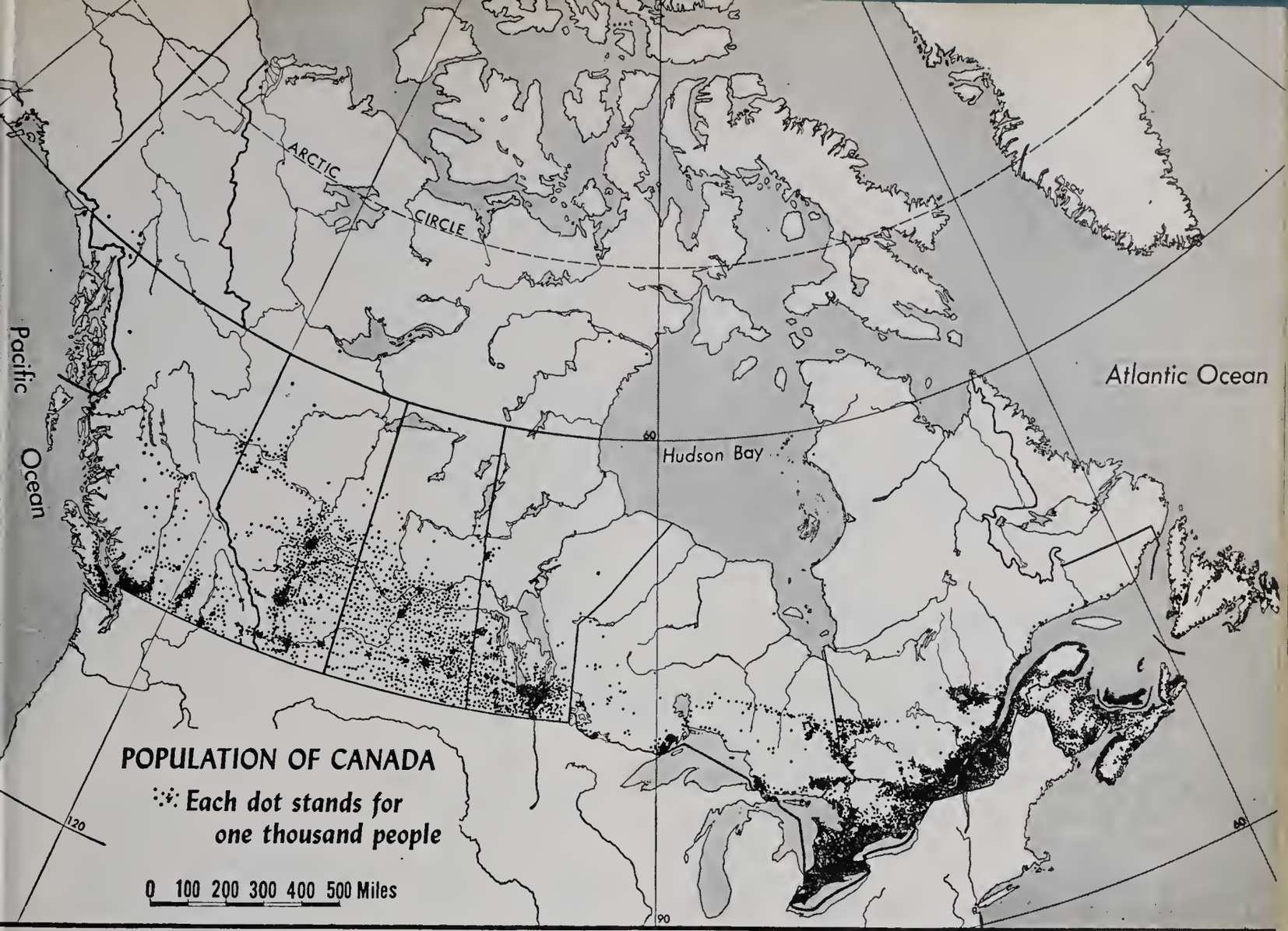












Population map of Canada

The Atlantic Provinces have always looked to the sea. The population map shows this very clearly. Because of the rocky, forested interior and the deeply *indented shoreline*, the people of these provinces have, throughout their history, lived near and travelled by the sea.

From this description, can you figure out what the chief industries of the Atlantic Provinces might be?

THE ROCK COUNTRY

The Rock Country is the largest region in Canada. It is part of a much larger region called the Canadian Shield, which reaches into Canada's arctic islands. You cannot see from the physical map where the lowlands or *plains* end and the Rock Country begins, but if you were to travel to the Rock Country by car, you would be able to see where one region ended and the other began. South of the Rock Country, the soil is good and there are many farms. When you come to the Rock Country, the land is rocky and there are few farms. Most of the land is not good for farming, but it is excellent for growing trees.

With your finger trace a line that goes from the Arctic Ocean through Great Bear Lake, Great Slave Lake, Lake Athabasca, Lake Winnipeg, Lake Superior, and Georgian Bay. Move your finger from the southern tip of Georgian Bay to Kingston. Finally, follow the north shore of the St. Lawrence River downstream to the Strait of Belle Isle. You have now outlined the Canadian Shield. It is called the Shield because it is shaped something like a shield. It is the southern part of the Shield, the part

lying mainly in Manitoba, Ontario, and Quebec, that we have called the Rock Country. The remaining part of the Shield we shall study in the chapter on the North.

Except for some special areas where there are mines or where there are lumber and paper mills, you will find very few people living in the Rock Country. Most of the people living in the Rock Country earn their living in ways that are directly connected with the rocks, the lakes and *rivers*, or the forests. What would these occupations probably be?

THE ST. LAWRENCE VALLEY

Look at the physical-political map of Canada, pages 30-31. Along both the north and south shores of the St. Lawrence you see a stretch of lowland. The lowland, though extremely important, is not large. A few miles to the north of the river it is ended by the Shield; to the south it is bounded by the Appalachian Mountains and the United States *border*.

This region of *fertile* lowland has been settled for a longer period than has any other area of Canada. Can you tell why the people settled there first? For a long time farming was the only industry carried on there. Now the region is one of the most highly industrialized sections of Canada.

It is the traditional home of the French-speaking Canadians. The French were the first white people to live in what is now Canada.

THE LAKE PENINSULA

The Lake Peninsula is actually part of the same geographic region as the St. Lawrence Valley, but we study it separately because there is so much to say about the region, because a small piece of the Shield separates the two parts of the lowland, and because the two sections have different histories. All the land in Ontario that is south of the Canadian Shield belongs to this region. What, besides the Shield, form the boundaries of the Lake Peninsula? We call this region the Lake Peninsula because, with the *Great Lakes* almost surrounding it, it is like a large peninsula.

The Great Lakes are very important to southern Ontario. They enable goods to be brought to and taken away from this region easily and cheaply. Heavy, bulky goods can usually be shipped by water more cheaply than by land.

The Lake Peninsula has excellent farm land, and farming is important. However, the most outstanding thing about southern Ontario is that it is the most highly industrialized part of Canada. We shall find the reasons for this later on when we study the Lake Peninsula.

THE CENTRAL PLAINS

Look at the vegetation map of Canada, page 37. In the western half of Canada you will see an area of grassland. This is the heart of the Canadian prairies, although we include more land than this when we talk of the *Prairie Provinces.* There are three Prairie Provinces: Manitoba, Saskatchewan, and Alberta. The prairies are part of a great plain that stretches from Texas to the Arctic Ocean.

Our history books tell us that these plains used to be a waving sea of prairie grass; thousands of buffalo wandered north and south with the seasons, grazing on the plains. All this has changed. In most parts, wheat fields have taken the place of the waving grass. This region is sometimes called Canada's "bread basket." In the areas that are too dry or hilly for wheat, cattle and sheep instead of buffalo feed on the grass.

THE MOUNTAIN REGION

Between the western edge of the Canadian prairies and the Pacific coast lies a



Map of vegetation of Canada

region of mountain ranges. In Canada, it is about five hundred miles wide, and includes part of Alberta, and all of British Columbia and the Yukon. Even the islands off the west coast are really the peaks of mountains sticking up above the water. The mountains stretch from Alaska to the southern tip of South America. They stretch the full length of the Americas.

Look at the population map on page 35 to see where most of the people of British Columbia live. Then turn to the physical-political map on pages 30-31 and see what the land is like where they live.

The beautiful stands of such trees as the Douglas fir that are found in the western part of this region are the basis of the important lumber industry of British Columbia. What other industries are probably important there?

THE NORTH

Everyone knows vaguely where the North is, but it is difficult to draw a line and say, north of this line is the North. We have chosen the parallel of 60° north latitude as the boundary of the North.

Some of the North is beyond the *tree line*. Beyond the tree line, the soil never thaws out completely, but low shrubs, mosses, and many beautiful flowers are able to grow in the short summers. This type of land and vegetation is called *tundra*.

Naturally, very few farmers can make a living in this country, but the region is becoming increasingly important because it is now necessary to put radar and weather stations there, and because of the mines that are there and the mines that may some day be found there.



THE ATLANTIC PROVINCES

In 1805, the first real settlement in North America, north of the Spanish *colonies,* was established at Port Royal, in Nova Scotia. Since then the name has been changed to Annapolis Royal. If you go there you will be able to see what this settlement looked like, for an exact copy of the first settlement has been built on the original *site.*

Christopher Columbus discovered America, but the first white man, except for the adventurous Norsemen, to see Canada was probably John Cabot, who is thought to have landed on Cape Breton Island or Newfoundland. He took back the news to Europe that he had found the fabulous East, but on his next trip he had to admit that the eastern coast of Canada was not the wealthy and exciting Cathay. He did not bring back jewels and spices, but he did bring news of another kind of wealth to be found in the New World. He and his men told of great *shoals* of fish that were to be found off the coast of the new continent. Soon fishing vessels began to set out across the ocean to take advantage of this new and abundant source of fish. Since then, tens of thousands of men have earned their living fishing in the shallow waters off the coast of the Atlantic Provinces. Even now, many fishing vessels go there from Europe.

WHAT WE CAN LEARN FROM MAPS

EXPLORING THE ATLANTIC PROVINCES

1. Read again the description of the Atlantic Provinces on page 35.

2. On an outline map of the Atlantic Provinces, print the names of the four Atlantic Provinces and their capitals. Show the Gaspé Peninsula and Anticosti Island as well. Also put in the names of the surrounding waters: the Bay of Fundy, the Strait of Canso, Northumberland Strait, the Gulf of St. Lawrence, Cabot Strait, the Strait of Belle Isle, and the Bay of Chaleur. Whenever you come across the name of a town, river, body of water, or any other place name, you should look up its location and put it on your outline map. You should do this for every region that you study without being reminded to do it.

CLIMATE, VEGETATION, AND PEOPLE

1. What does the population map on page 35 tell you about where the people of the Atlantic Provinces live? Can you tell why most of the people of the Atlantic Provinces live near the coast? Why is Prince Edward Island an exception? Why do fewer people live in the Atlantic Provinces than along the St. Lawrence? The last is a rather difficult question. You may be able to answer it better after you have studied this chapter.

2. Look at the rainfall map on pages 8-9. It is not hard to guess why there is so much rain.

3. Look at the growing-season map on pages 10-11. How long is the growing season? Which province has the shortest growing season?

4. Look at the vegetation map. Do you think that most of the original forest has been cleared for farm land? People have been living in the Atlantic Provinces for almost as long a time as they have been living along the St. Lawrence, but in spite of this, the Atlantic Provinces contain large areas of forest. As you read the rest of the chapter try to find why there is so much forest land in the Atlantic Provinces.

THE PROVINCES

WHAT THE LAND IS LIKE

Before Newfoundland joined Canada in 1949, the three provinces of New Brunswick, Nova Scotia, and Prince Edward Island were called the *Maritime Provinces.* These three provinces may still be called by that name. When we include Newfoundland, however, we say the "Atlantic Provinces."

The word *maritime* means "of the sea." The Canadian *Maritimes* deserve the name, for their history, their work, and their way of living are all deeply affected by the nearby sea. And the sea is near. Turn to the map on page 41 and, with a ruler and the scale, find what is the greatest distance from the sea that a person in the Atlantic Provinces could live.

As you can see from the map on page 38, we have included the Gaspé Peninsula (a part of Quebec) in the Atlantic region. It is not part of one of the Atlantic Provinces, but it belongs to the same geographic region as they do.

Many millions of years ago the Atlantic Provinces were not nearly as maritime as they are now. Newfoundland and Prince Edward Island were not islands, and the Grand Banks were not below the surface of the ocean. If you look at the map on pages



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A typical view of farm land in Prince Edward Island

30-31, which shows the depth of the ocean, you will see that shallow water extends quite far out into the ocean. This edge of the continent that reaches out underneath the ocean, before dropping off sharply to the deep ocean floor, is known as the *continental shelf*. Once most of it was dry land, but as one million years succeeded another, some land sank beneath the ocean, and the action of rain, river, ice, and wave washed more earth into the ocean. It is fortunate for the Maritimes and Newfoundland that this continental shelf does exist, for without it there would be no large fishing industry. In the vast depths of the ocean few fish are caught; only on the continental shelves of the world can fishermen ply their trade in any numbers.

The Atlantic Provinces all have much the same type of geography, though with variations, of course. Except for Prince Edward Island, they all have a rocky interior of gently rounded hills covered with *evergreen* and broadleaf forests. These hills are the worn-down remains of mountains. The hilly interiors are cut by river valleys. Around the coasts are the lowlands. The lowlands and valleys are generally fertile, because the good soil from the mountains has been washed down into them. The *shores* are indented by many *coves* and *inlets,* because long ago the land sank and the sea flooded the low areas.

NEW BRUNSWICK

The interior of New Brunswick is more rugged than that of Nova Scotia. It is the home of the lumberman and sportsman; the land is best suited to the production of trees. The St. John River Valley is a broad stretch of fertile lowland that reaches far into the interior. It is a lovely valley, with farms, villages, towns, and cities along its banks.

On the southeastern shore of the province is the Bay of Fundy. It has a unique *tide;* on the other coasts the tide rises four or five feet, but there there is sometimes a difference of as much as forty feet between the levels of the water at high and low tide. If you stand on a dock at high tide, the water laps at your feet, but at low tide you have to look down the pier to find the water.

Where the land slopes gradually away from the shore, the water drains away from the land, leaving large areas of mud flats. The unusual tide occurs because the *bay* is narrow and the incoming tide is funnelled into it instead of spreading out evenly.

NOVA SCOTIA

The eastern half of Nova Scotia is the rocky, mountainous part. Here are the forests and the rocky, rugged fishing coves, beloved of artists.

Although much of the province is rocky and hilly, there are several very fertile valleys, such as the Annapolis Valley, and stretches of fertile lowland around the bays and along the Northumberland Strait. The fertile valleys and lowlands are the basis of Nova Scotia's farming industry.

Only the narrow Chignecto Isthmus joins the province to the *mainland*, and the northern quarter of the province is, in fact, separated by the narrow Strait of Canso from the mainland to form Cape Breton Island. A *causeway* has been built across the *strait* to join the island to the mainland.

Cape Breton Island is more mountainous than the rest of Nova Scotia. In its northwest corner is the famous Cabot Trail that winds through magnificent scenery between the ocean and the mountains. This trail and the Bras d'Or Lakes in the middle of the island attract many tourists to Cape Breton.

PRINCE EDWARD ISLAND

When you cross the Strait of Northumberland you come to a different type of country. The rocky, somewhat mountainous aspect of the other provinces gives way to a gently rolling, fertile region. There are no great stretches of wilderness; *cultivated* fields, pastures, and scattered *wood lots* are everywhere.

The north shore has been worn away by the waves and provides no good *harbors* (though the beaches are excellent for swimming). The southern shore follows the pattern of the other provinces and contains bays and inlets.

NEWFOUNDLAND

The island part of Newfoundland is the northernmost tip of the Appalachian Mountain range. It is a rocky and forested land. On the western shore and in the river valleys farming can be carried on, but on the higher ground or in the mountainous areas one may meet only the lumberman, miner, prospector, and hunter.

On the southern and eastern shores, the *coastal plain* has almost entirely disappeared, and in many places rocky *cliffs* rise straight out of the sea. The earliest settlers of the island were fishermen who landed to repair their ships and equipment, to dry their fish, and to take on fresh water. Until quite recently, the people of Newfoundland have been mainly interested in fishing.

A map of the Atlantic Provinces



INDUSTRIES OF THE ATLANTIC PROVINCES

Using the knowledge of the Atlantic Provinces that you already have, it should not be difficult to guess the occupations of the people who live there. Their nearness to the fishing banks and their many excellent harbors have made them fishermen; the fertile lowlands and river valleys invite farming; and the interior wildernesses contain wealth in the form of trees and minerals.

HARVEST OF THE SEA

Fishing is the historic industry of the Atlantic Provinces. Fish first brought men to this part of the New World, and fishing has always been one of the chief industries.

On the Atlantic coast there are two main types of fishing – inshore and deep-sea. The deep-sea fishermen go to the banks to fish, and may stay there for several weeks at a time before bringing home their catch and getting more supplies. The inshore fishermen catch their fish in the waters within twelve to fifteen miles of the coast; they usually return home every night.

Deep-sea fishing. The banks are the places where the floor of the ocean is between 300 feet and 600 feet from the surface of the water. In these places the sunlight can reach the bottom of the ocean and seaweeds grow. In these seaweeds, tiny water creatures live; small fish feed on the tiny plants and animals; big fish come to the banks to feed on the small fish; and men come, in their turn, to catch the big fish.

The fishermen of the Atlantic Provinces are close to the fishing banks. Most of the fishing boats that dot the Grand Banks and

Fishing boats docked at a village in the Atlantic Provinces. The village is in the background.

National Film Board of Canada



the other banks in the summertime come from Canada, but a great number come from Europe and the United States.

The traditional method of deep-sea fishing is to go to the banks in a sailing schooner and then fish with trawl lines from smaller boats, which are called dories. The trawl is a long line with a large number of smaller lines and hooks attached to it. The trawl line is lowered to the ocean floor and the two ends are marked by buoys, so that the fishermen can find it again. The two men in each dory spend the day going back and forth along the trawl lines, pulling up the fish, and rebaiting the hooks. At night they return to the schooner. Cod, haddock, and halibut are the fish caught by this method.

Long-liners are taking the place of schooners. They look much like schooners and they use trawl lines, but they have diesel engines and the trawl lines are from five to six miles long. The trawl lines are set and collected from the long-liner, so no dories are needed.

Lately, draggers have become more and more popular among the deep-sea fishermen. These vessels drag behind them a bag-like net called an otter-trawl that scoops the fish in as it passes along the bottom of the ocean. Steam trawlers also do the same type of work but there are not too many of them because, though they are bigger and more efficient than the draggers, and can work for most of the winter, they are expensive. Otter-trawls are more efficient than trawl lines.

Most Canadians and Americans now prefer fresh fish, which they can get only if the fish are frozen the same day that they are caught and then sent by train in refrigerator cars to the rest of the country. A sailing schooner has to stay at sea for several weeks, and the fish have to be preserved by the old methods of drying and salting. Since Canadians and Americans do not buy much salt or dried fish, most schooner fishermen have had to sell their fish in Europe or the West Indies. Now that most European countries are doing their own fishing and are trying to cut down on their buying from *dollar areas,* fishing companies are turning more and more to selling their fish fresh or fast frozen. Steam and diesel-powered ships are now being used to catch the fish and bring them to shore quickly. The colorful schooners are disappearing from the fishing banks.

Inshore fishing. The inshore fishermen usually work in gasoline or diesel-driven boats. They use trawl lines, *gill nets,* weirs, lobster traps, tongs, and scallop dredges.

The trawl lines are used to catch cod and halibut just as they are on the banks. The gill nets are used to catch fish such as the herring and mackerel that swim near the surface of the water. The gill net is stretched between two buoys; lead weights keep the bottom of the net down. The fish swim into the net and are caught by their gills.

The lobster traps look like big baskets. The lobster is attracted by the bait that is put inside the trap. It goes through the entrance, which is big on the outside and narrows as it approaches the inside of the trap. When the lobster is inside the trap it cannot find the narrow opening and so is caught.

Oysters and scallops are collected from the shallow waters with tongs or by baskets called dredges that are scraped along the bottom of the bays. They are like the otter-trawls but much smaller.

Weirs are big traps built like a stockade near the shore. The fish bump into the stockade and then swim along it until they are led to the narrow opening of the weir. Once in, they cannot find their way out. Weirs are widely used in the Bay of Fundy to catch sardines and herring. New Brunswick has the world's largest sardine cannery.

Traps made of net are also used. These traps have a mouth that leads into a long tunnel of net, which, in turn, leads into a large net. Once in the large net, the fish cannot find the narrow entrance tunnel.



Transportation routes in the Atlantic Provinces.

FARMING

The damp, foggy climate of the Atlantic is not good for wheat; nor is it good for corn. But it is excellent for the various hay crops, such as timothy and clover. Of course, climate that is good for hay is also good for *pasture;* grass grows thick and tall. Farmers do not grow the hay to sell; they can make more money by raising animals to eat the hay and grass and then selling the animals or animal *products,* than they can by selling the crops.

Animals need other food besides hay and grass. In the Atlantic Provinces farmers raise feed crops that grow well in their climate: oats, turnips, and large, coarse beets that are similar to sugar beets.

Dairy farming is the chief farming activity in the Atlantic Provinces, but raising *beef cattle* and potatoes is also important.

Farming is important in all the Atlantic Provinces except Newfoundland, whose rocky surface and short summer make farming unprofitable in all but a very few places.

In Prince Edward Island, "the Garden of the Gulf," farming is the main occupation. In the rich red soil grow the potatoes for which the Island is famous. Many of these are seed potatoes; they are planted, rather than eaten, by the farmers who buy them. Herds of dairy and beef cattle as well as fields of hay, oats, and other crops dot the landscape.

In Nova Scotia, farming and fishing are almost equally important. The Annapolis Valley is unique in the region. There, for about sixty miles along either side of the valley stretch apple orchards. Other fruits are grown, but the apples dominate the scene. The damp, mild climate and good soil produce a fine apple. The Annapolis Valley lies between two fairly high *ridges,* which protect it from the wind and some of the fog that comes inland from the Bay of Fundy.

The *marsh* lands at the northern end of the Bay of Fundy are rather unusual. The land has been formed from the soil deposited there at high tide. During many centuries the level of the land has been raised, and now farmers have *diked* it to keep the tide out and are using the land for farms.

A lot of farming is done in New Brunswick, but *agriculture* is not the chief industry. Some of the farms are in the pleasant St. John River Valley. The upper part of the valley is as famous as Prince Edward Island for its potatoes. Hay and oats are raised as feed for dairy and beef cattle.

FORESTED UPLANDS

The forested interiors of the provinces are the basis for the lumber and *pulp* and paper industries. Once again there is an exception — Prince Edward Island. Most of the land on the island can be used as farm land. There are numerous wood lots on the island, but not enough trees to support a large lumbering business.

In the days of the wooden ships, when timber in Europe was not plentiful, the trees of the Maritimes gave this area a leading place among the shipbuilding centres of the world. The beautiful fishing schooners, such as the *Bluenose,* are still famous. Some

of the clipper ships were built in the Maritimes' shipyards. The coming of the steel ships dealt the industry and the Maritimes a blow from which they have not yet fully recovered.

Lumber was the chief product of the forests of Nova Scotia and New Brunswick, but pulp and paper are becoming increasingly important, especially in New Brunswick and Newfoundland.

Making pulp and paper is the most important industry in New Brunswick. About eighty per cent of its land is still covered with forest. Since this land is too rocky and *swampy* for farming, the forest industries should continue to flourish if good *conservation* methods are carried out. Many men in New Brunswick combine farming and lumbering. In the winter they are lumberjacks, but in the summer, when not much work is done in the forests, they go home to look after their farms. The trees are cut in the winter and the logs hauled over the frozen and snowy ground to *streams*. In the spring, when the ice melts, the logs float down the streams to the mills. Where there are no streams, or the streams are too shallow, the logs are hauled to the mills by tractors.

Nova Scotia still has much wooded land, especially on the rocky ridges of the interior. This makes the timber industry an important one there also.

In Newfoundland pulp and paper production has become extremely important. At the beginning of this century, this industry did not exist there; now it brings more money to Newfoundland than fishing does, although most of the people of this province still depend upon fishing for their livelihood. Two towns, Corner Brook and Grand Falls, have been built inland. In these towns are the mills that turn the logs into pulp and paper. Very little of the timber cut is used as lumber. The money that this industry has brought to Newfoundland has made a great difference to the island.

MINING

There are many different types of mineral deposits found in Nova Scotia, but coal is by far the most important. There are a number of coal mines in Nova Scotia, but the largest ones are on Cape Breton Island near Sydney. They have made Sydney an important iron and steel centre. To make iron and steel, coal and iron ore and some limestone are needed. Since the weight of the iron needed is less than the weight of the coal, it is cheaper to bring the iron *ore* to the place where the coal is. The iron ore and limestone used at Sydney come from Newfoundland.

Because it costs so much to move coal by land from Nova Scotia to the rest of Canada, not much Nova Scotian coal is sold outside the Atlantic Provinces. Most of it is used locally in iron and steel plants and other factories, and for heating the houses.

Bell Island, where there are iron deposits, and Buchans, where a number of minerals are mined, are the two most important mining centres in Newfoundland. It is hoped that, as more exploring is done in the interior of Newfoundland, more deposits of metal will be found. We shall speak of the iron deposits in the Labrador section in the next chapter.

A small amount of coal mining is done in New Brunswick. In the last few years several large deposits of zinc, lead, and silver have

Potato diggers at work in New Brunswick.

Courtesy New Brunswick Travel Bureau





Courtesy New Brunswick Travel Bureau

A sawmill and lumber yard. The timber was cut in the interior of New Brunswick.

been discovered near Bathurst. These new mines will soon provide a new source of income to the people of the province.

MANUFACTURING

Manufacturing in the Atlantic Provinces depends on both local and imported raw materials. Factories such as pulp and paper and *sawmills*, fish processing plants, creameries, *meat-packing* plants, and steel mills are dependent on local raw materials. The *refining* of *petroleum* and sugar, and the *processing* of coffee, tea, and spices, and other imported materials, take place in the larger seaport cities.

THE TOURIST TRADE

If you look at your map of North America you will see that Newfoundland reaches farther out into the Atlantic than any other part of the continent. It is also on most *great circle routes* to England and parts of Europe. The airlines take advantage of these facts by using the airfield at Gander as the last fuelling point on their trans-Atlantic flights. Huge airliners, headed for all parts of the world, land at Gander before taking off for the long flight to Europe.

In the other three Atlantic Provinces the tourist trade is growing in importance. They have much to offer. There is excellent hunting and fishing in the forests of New Brunswick. The Maritimes were among the first New World lands to be settled and for over a century were a battleground for the French and English; visitors find the historic sites and forts interesting places to visit. The rugged scenery, picturesque fishing villages, lovely rural landscapes, and good beaches in the various parts of the Maritimes attract many visitors each year.

CITIES

St. John's. St. John's is the capital and principal city of Newfoundland. The harbor is excellent, as you can imagine by looking at the "Narrows," the narrow opening to the harbor. Most of the activity of the town is concentrated at the docks, where fish are canned, frozen, and packed, and the fishing vessels come and go. Many of the goods and people coming to or going from Newfoundland must go through this *port*. From St. John's goods and people go by coastal steamer or by train to their destinations.

Halifax. Halifax is the principal Canadian seaport on the Atlantic Ocean. The port of Halifax is never closed by ice as are the St. Lawrence River ports of Quebec and Montreal. During the winter, Halifax gets much of the *trade* that would go to Montreal or Quebec at other times of the year. Even some of the wheat from the Prairie Provinces is *exported* through Halifax. The wheat comes to Halifax by railway from western Canada.

At any time of year Halifax is a busy port. It handles most of the trade for the Atlantic Provinces. It is the home port of many fishing vessels. It is an important naval base. There are as many as sixty manufacturing industries in the city.

Saint John. Saint John, not to be confused with St. John's, is the principal city and main port of New Brunswick, though Fredericton, in the centre of the farm land

of the St. John River, is the capital, and Moncton is a larger railway centre.

Besides being a transportation centre and the eastern *terminus* of the Canadian Pacific Railway, Saint John is an important manufacturing centre.

Charlottetown. Although small when compared with other important Atlantic cities, Charlottetown is the largest city on Prince Edward Island and is the capital of the province. It is a *commercial* city and is the centre of the island's tourist industry.

THE GEOGRAPHY WORKSHOP

I. TRAVELLING TO THE ATLANTIC PROVINCES

Here are some questions that you would have to answer if you were planning a trip to Halifax. If you live in Halifax, plan a trip to Saint John or Corner Brook.

1. On a road map mark the route you would follow if you went by car. Remember that you can often make better time on a first class highway than on a secondary road that may be a number of miles shorter. If you are planning a pleasure trip, you may want to stop off at several places in order to see some place of interest.

2. If you drive about three hundred miles a day, how long would it take you to reach Halifax? Where would you stay at night? Make a list of the towns or cities in which you would stay at night. Why did you choose these places?

3. How much would it cost to travel to Halifax by bus? How long would it take? The nearest bus terminal can give you this information.

4. How long would it take to reach Halifax by air? by train? How much would these trips cost?

II. LATITUDE AND LONGITUDE

1. In the first part of this book you learned about latitude. What is the latitude of St. John's, Newfoundland? How does this compare with the latitude of your own home? What countries lie in the same latitude as Newfoundland?

2. How many degrees of longitude is St. John's west of Greenwich, England? How many hours' difference in time is there between the two places?

III. THINGS TO DO

1. Make a chart showing a food chain of the fish of the Grand Banks.

2. List the methods that fishermen use to catch fish in the Atlantic Provinces. Divide the list up among the members of the class. Each group should make a chart illustrating one method of fishing and be able to explain it. You should use more than your textbook for this project. An encyclopedia or back copies of the *Canadian Geographical Journal* will have much of the information you want. If you have time, you might write to the Department of Fisheries in Ottawa for any booklets they may have.

The fishermen are seining a weir. They are using a net to bring in the sardines trapped by the fence.

Courtesy New Brunswick Travel Bureau





THE ROCK COUNTRY

Long before Canada became part of the British Empire, the Canadian northland was claimed by England. Voltaire once asked in surprise why the French thought it worth-while to fight over a "few acres of snow." He was referring to the St. Lawrence lowlands. How much less desirable he must have thought the cold "region of swamps and sterile pinelands" that surrounds Hudson Bay! Yet this land, unpromising as it seemed, brought wealth then to the English, and today helps to bring prosperity to Canada. Furs, and now timber and minerals, are the Rock Country's contribution to our needs.

Even though England, through the Hudson's Bay Company, owned most of the northland, the English did not settle there as they did along the Atlantic coast, nor did they even explore it to any great extent at first. There was no need to go inland, for all they wanted was furs, and these the Indians brought to the river *mouths*. Later, the fur companies did explore the rivers and lakes, but it was not until the present century, with the invention of the airplane, that man began to make any real inroads into the northern parts of the Rock Country. These inroads are small enough when you consider the vast tracts of land still unoccupied.

Now let us see what kind of land this is that for so many years repelled man, yet is one of the bases of Canada's prosperity.

WHAT WE CAN LEARN FROM MAPS

Early in each chapter of this book you will find map exercises like these. You should work them out carefully before you begin to read the description of the country. Work with maps at the start and you will find that your later reading and picture study will be much easier to understand.

When there is a question, it is for class discussion. You and your classmates will look for the answer on the maps. When you are working with maps, you must look at the maps; you could never remember what is on them well enough to be sure that you were right.

Sometimes you will find what you need on only one map, but very often you will be asked to compare maps. Frequently you will use the maps in the first chapter. With them you will use new maps that show the section of the world that you are studying.

Often the answer to a question asked in the map exercise is given. You should try to find the answer for yourself first and only look at the answer in the book to confirm your own solution.

FINDING THE ROCK COUNTRY

1. The map on page 48 shows the whole of the Canadian Shield. Part of it is outlined by a dotted line and the rest is in black. The 60th parallel of latitude divides the Shield into the two parts that we shall study separately. The part of the Shield that we call the Rock Country is in black. Of what provinces is 60° north latitude the northern boundary?

The Rock Country lies in six provinces of Canada. What are they? About how much of each province is in the Rock Country?

2. On an outline map of Canada draw the boundary of the Rock Country and the boundary of the Canadian Shield and put in the names of all the important lakes through which the line passes. You should have the names of at least seven lakes on your map. Now put in the Slave, Churchill, Nelson, Abitibi, St. Maurice, Saguenay, and Mackenzie rivers.

Whenever the name of a town, lake, river, etc. is mentioned in the text you should look it up and put it on your map. Do this for all the chapters.

GEOGRAPHY AND WAYS OF EARNING A LIVING

1. Look at the rainfall map on pages 8-9. Then look at the growing-season map on pages 10-11. How much rain does the Rock Country get? How long is the growing season there? These maps tell you that there is enough rain for farming, and that in the southern part of the Rock Country, where most of the people live, the growing season is long enough for many crops. In most of the Rock Country, though, the growing season is fairly short. Even where the climate favors agriculture there is little farming done. Why?

2. Look at the vegetation map on page 37. The forest that covers the Rock Country is important, not only to the people there, but also to everyone in Canada, for it makes possible the pulp and paper industry, which brings more money into

These men are hunting in a part of the Shield which they could not reach easily without an airplane.

Courtesy Ont. Dept. Travel and Publicity



Canada than does any other industry. The Rock Country forest is also one of the few places left where fur-bearing animals still live in large numbers.

3. Look at the population maps on pages 14-15 and 35. The world population map shows that there is an average of less than two people per square mile there, except in the south, where there may be as many as twenty-five. The map on page 35 shows more clearly exactly where the people live. Comparing these two maps may be rather confusing; one map says that only twenty-five people live in one square mile, while the other map shows a thousand people living in one place. Your teacher will explain this. Both maps are correct.

4. Look at the mineral map on page 53. Does this explain anything about the population map? Write a note on population and resources in the Rock Country. First tell where most people live and then show what connection, if any, there is between this and the resources of the Rock Country.

PEOPLE AND INDUSTRIES OF THE ROCK COUNTRY

WHAT THE LAND IS LIKE

Millions and millions of years ago the Canadian Shield was covered with mountains. It seems impossible that such a range of mountains could disappear, but it did. Rocks break off and fall down the mountains; winds blow away the crumbled remains of rock; streams wear away the rocks and carry the *sediment* down to the valleys; and eventually the mountains are no longer there. This of course takes a very, very long time, so many millions of years that we cannot imagine them.

Glaciers helped with the job of wearing away the Shield mountains. Thousands of years ago the world climate became very cold, and *icecaps* like the ones now covering the North Pole and Greenland spread southward. As the *ice fields* flowed slowly over the Shield they pushed before them and carried along beneath them much of the earth and even the solid rock that had covered the area. This is why there is so much bare rock on the Shield and why, over almost all of this region, the earth is not deep enough or fertile enough for farming.

Although the glaciers scraped the Shield, this region is not flat in the same way that much of the prairies is flat. If you look at the physical map you will see that there are no high regions except in the Laurentian Highlands of Quebec and the mountains of Labrador and the Arctic islands. The rest of the Shield has an uneven surface with few large hills or mountains.

If you were to hire a bush pilot to fly you over the Rock Country, you would see, of course, mile upon mile of evergreen forests and rocks. But you would also see thousands of lakes and streams; sometimes there seems to be almost as much water as land. The Shield probably contains more fresh water lakes than all the rest of the world. This again is the work of the glaciers. They scraped hollows in the rock which filled with water after the ice retreated. In some places the glaciers dropped rocks and earth that dammed up the streams. In these spots the water cannot flow to the sea; instead it stays where it is and forms the lakes and *muskeg* that you find in the Shield. Evergreen trees, rocks, lakes, streams, and muskeg make up the Rock Country.

THE PEOPLE OF THE ROCK COUNTRY

In the early days of the Hudson's Bay Company few people lived in the Rock Country. It is still sparsely populated and

most of the people who do live there are grouped together in a few cities. This may seem strange when you think of how much of the world is overcrowded, but you have probably realized by now that not too many people can earn a living in this region.

The people of the Rock Country face many problems in day-to-day living that most people in this country do not have. There are only a few places where farmers can grow vegetables and raise animals in quantities large enough to feed large cities. Towns and villages that are not near good farm land must have their food shipped in to them.

Because the winters are cold and long, houses must be built so that they can be kept warm. Small houses are easier to heat than big ones, especially if cellars for furnaces cannot be dug in the solid rock. This is one reason why many of the houses in the Rock Country are fairly small.

City water pipes must be buried quite deep to keep them from freezing. Imagine the difficulty of burying water and sewer pipes for a city built on solid rock.

One of the greatest problems in the past has been transportation. A few years ago the only ways to travel were by train and canoe. Now there are regular airline flights, some good roads, winter *tractor trains,* steamship lines, and private airplanes, serving much of the Rock Country.

Education is a problem for the people who live there because many of them live so far apart. Where roads have been built, school buses can bring the children from outlying districts to a central school. Where there are no roads, radio schools, correspondence courses, and train-car schools are used. Boarding schools are operated in some places, but they make the cost of education very high.

How do the people who live in the Rock Country make a living? Your study of the resources and population maps showed you that mining is one way. The forests would lead you to suspect that lumbering is another industry. You might also guess that the fur trade is important. It is still carried on, though it is not as important as it once was. One industry that you might

Notice the rocks, lakes, and lack of vegetation in this part of the Shield. The buildings housed the men who explored this region for iron.

Photographic Survey, Ltd.





Courtesy Ont. Dept. Travel and Publicity

A gold mine in northern Ontario. The tallest building houses the lift down which the miners go into the mine.

not think of is the tourist trade. The tourist trade of the Rock Country is one of the biggest industries in Canada.

MINING

At the end of the last century the Rock Country was still almost completely unexplored. A few Indians and trappers knew their way around certain sections of it, but for the most part the Rock Country was as unknown as darkest Africa. It was suspected that there were deposits of metal there, but few of the great mining centres had been developed or even discovered.

There is an old saying that "Gold is where you find it." Scientists can tell from the climate, soil, and surface of the land whether a region would be good for farming. Forest experts know whether a certain place would be a good spot for a lumber mill. Other experts know whether it would pay to dam a river and build a *power plant*. But no one knows for sure that there is gold in a place until someone finds it there. The same is true of all other mineral resources. A knowledge of *geology* can only help you to find the most likely places in which to look for minerals.

Early mines. The first mining strike in the Rock Country was an accident. In 1883, the workmen building the Canadian Pacific Railway line north of Georgian Bay discovered the copper deposits of the Sudbury area. Today Sudbury produces approximately eighty per cent of the world's supply of nickel, about half of Canada's output of copper, and all her supply of platinum.

Nickel, when used alone or mixed with other metals, is able to withstand terrific heat and still remain tough and strong. Jet aircraft builders use nickel in making jet engines. Many parts of automobile engines get very hot, and so nickel is used in car motors. When we think of the many ways in which gasoline engines and jet engines are used, we begin to see how important Sudbury is, not only to Canada, but to the world as well. Because nickel will resist rust and stains, it is used in making stainless steel.

The next major discovery also came as a result of railway activity. At Cobalt the men building the Timiskaming and Northern Ontario Railway found silver. From there prospectors, sure that there must be more wealth hidden in the rocks of northern Ontario, went out and discovered the gold deposits in the Timmins and Kirkland Lake areas. Later, large deposits of gold were also discovered in the Noranda region of Quebec. Important deposits of copper are mined in the Noranda-Rouyn region.

Flin-Flon, which straddles the boundary line between Manitoba and Saskatchewan, was the next major mining area to be developed. It has large copper-zinc deposits.

These five regions with their gold, nickel, copper, and zinc, made up the main mining areas of the Rock Country until World War II, although there were quite a few smaller mines scattered through the region.

After World War II. During and since the Second World War, several new discoveries of the greatest importance have been made. Most of the new mines are far from any centre of civilization so that a long time and a great deal of money were spent

before they could begin producing ore. Railway lines had to be built at great expense before much of the equipment could be taken into the mines and before any large shipments of ore could be made. Airplanes did much of the early work of bringing in supplies.

Until after World War II, Canada had to *import* most of the iron ore for her steel industry. This was not a good situation because it cost Canada a great deal of money to buy the ore and because if, for any reason, there were a shortage of iron ore, the United States, most naturally, might not be willing to send much ore to Canada.

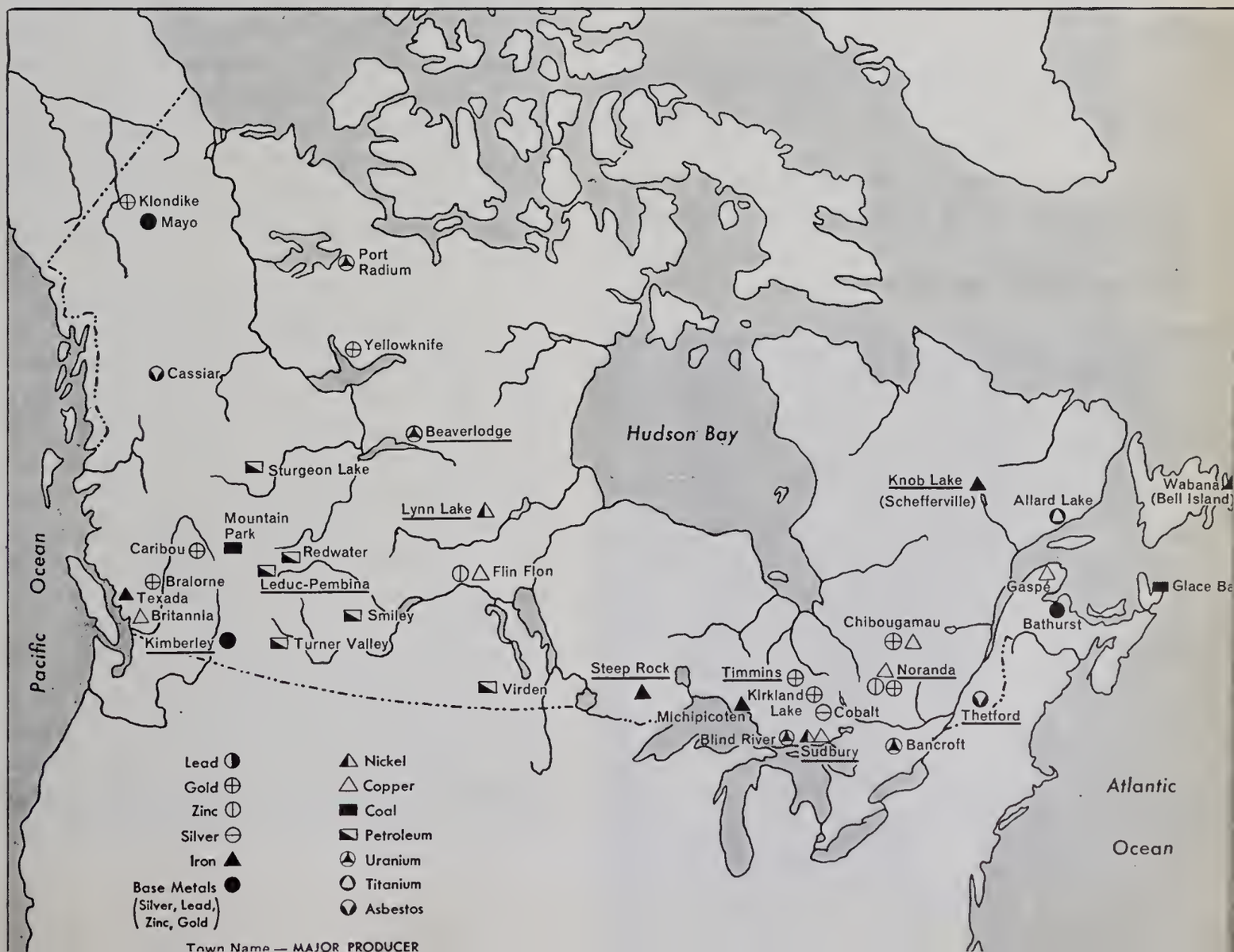
This situation has been changed by two important discoveries of iron deposits in Canada. It is expected that these mines will be equal to all Canada's needs, and allow us to export iron ore.

The first mine to begin producing was Steep Rock. This mine is situated halfway between Lake Superior and Lake of the Woods. There, beneath a lake, rich deposits of iron ore were discovered. The lake has now been drained and thousands of people have moved there to work as miners or to look after the needs of the miners.

The other, and larger, deposit is on the border between Labrador and Quebec. Millions of dollars had to be spent to build a railway from Seven Islands on the St. Lawrence River to the mines around Knob Lake. This railway carries millions of tons of ore each year. The ore is sent by boat to steel mills in Canada and the United States.

The Lynn Lake copper-nickel mines in northern Manitoba are another recent find. They will help to put Canada even further ahead in the production of these metals.

A mineral map of Canada showing some of the mining centres of Canada. New mining areas are being discovered all the time. By the time you study this map, new mines may have been discovered that are not on it.





Courtesy Ont. Dept. of Lands and Forests

A fire look-out tower. From the top of this tower the look-out man can see for many miles around.

Recently, important deposits of copper have been discovered in the Chibougamau area of Quebec.

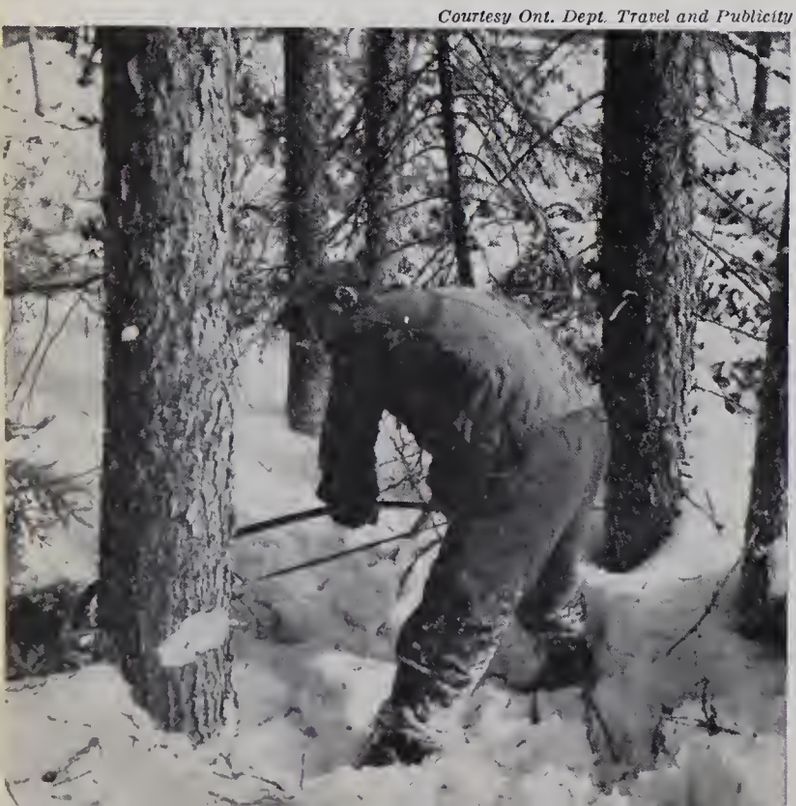
Canada has led the world in the production of *asbestos* because of the mines in the *Eastern Townships* of Quebec, and now new asbestos mines have been discovered in northern Ontario. Perhaps the world's largest deposit of *titanium* has recently been found in Quebec.

The development of atomic energy has made the *uranium* mines around Lake Athabasca important. Some rich uranium mines have recently been found in Ontario.

The above descriptions may give you an idea of how vital mining is in the Rock Country. When you study the mountain region you will find out about another important mining region.

A woodsman felling a tree with a saw.

Courtesy Ont. Dept. Travel and Publicity



FOREST INDUSTRIES

Mine shafts are not the only sight typical of the Rock Country. Lumber stacked by the railways, and rivers full of logs are also everyday sights. The lumber mills are usually found in the same areas as the mines, or along the railways. If you study a railway map you will see, by comparing it with the population map, that the population centres in the mining towns and then spreads out along the railway. It is cheaper and easier to bring the logs down the rivers to the mills at the railway than it is to process them where they are cut and then try to get them to the *markets*.

The pulp and paper industry is one of the most important industries of Canada. In fact, the products of this industry, newsprint and *wood pulp* combined, are Canada's leading export. This means that Canada gets more money by selling these articles abroad than she does from the sale of any other product that she exports. Canada produces more newsprint, which is the paper used in newspapers, than does any other country in the world.

Most of Canada's supply of *pulpwood* is cut in the Rock Country, mainly in Quebec and Ontario. Some of the pulpwood is made into paper before it leaves the Rock Country, but much of it is processed in the St. Lawrence lowlands. Sometimes the

mills in the north turn the pulpwood into wood pulp before sending it south. Sometimes they only take off the bark and cut the logs into convenient lengths. Look up the difference between pulpwood and wood pulp in the glossary at the end of the book. We will learn more about the paper industry when we study the St. Lawrence lowland.

Most of the wood cut in the Rock Country is used to make paper, but some of it is used for lumber, railway ties, poles, and fuel.

There are several factors that make the Rock Country suitable for the pulp and paper industry. First, of course, there is the large supply of trees. Second, the vast network of streams and rivers makes it easy to move the cut trees. And third, the rivers also provide the power for the mills.

Saving our forests. When people first moved into the Rock Country, the forests provided the main income. In the southern part of this region the original forests were soon cut down. When the trees were gone, the lumber companies had to close their mills and move to new forest areas. The towns that had been built around the mills almost disappeared. Many families tried to farm the land that had been left and spent a life-time of disappointment trying to grow crops on the poor soil.

Some of the more wisely operated companies are cutting only as many trees as the forests can grow each year. These companies will always have a supply of trees. The people who work for them have a much better chance of having steady work and a better standard of living than have those who are employed by the more short-sighted companies.

Wasteful cutting and lack of replanting are not the only methods by which our forests are being destroyed. Forest fires take a terrible toll. Every year, Canada loses an average of over four million dollars' worth of trees and spends over a million dollars fighting forest fires. Most of these fires are caused by careless smokers and campers. Insects, too, can destroy many acres of trees a season.

The provincial and Dominion governments have realized that they must do something to save the forests. In the accessible regions, the ones that can be reached by road or by train, watch towers have been built. Where there is no other means of transportation, airplanes patrol to watch for smoke. When a fire is sighted, men and equipment are rushed to it as fast as possible. Sometimes it takes several days to get to the fires. In a few places, parachute fire brigades have been organized to fight this type of fire.

The various departments of lands and forests carry out experiments to find the best ways to fight insects. Insect control groups go out in the summer to try to kill or stop the insects that prey on trees.

HYDRO-ELECTRIC POWER

The rivers of the Rock Country are an important source of *hydro-electric* power. Without this power, many factories would have to close, and tens of thousands of workers would be without work.

Because the Rock Country is covered with trees, the snow melts gradually in the spring, and because the land is rocky the water runs off without soaking in. This water collects in the low places in thousands of large and small lakes, which serve as water storage *reservoirs*. These reservoirs keep the rivers that are used to make most of the electricity for Quebec, Ontario, and Manitoba from going dry in the summer. The main sources of power in the Rock Country are the Saguenay, St. Maurice, Ottawa, Abitibi, Hamilton, and Winnipeg rivers.

MANUFACTURING

There is very little manufacturing done in the Rock Country. There are some pulp



Sources of hydro power in Canada. The circle that is not filled in represents the St. Lawrence Seaway power project, which has not been completed yet.

and paper mills and a few lumber mills, but most of the processing is done in other regions. Some refining of metals is done at such places as Noranda, Sault Ste. Marie, and Copper Cliff, near Sudbury, but again many of the ores are sent to other regions to be processed.

FARMING

As you know, farming in most parts of the Rock Country is either very difficult or impossible. But in northern Ontario and Quebec there is a clay belt stretching from Hearst in Ontario to about 100 miles inside Quebec. Farming there is possible, although somewhat limited by the short growing season. Farming has not been fully developed there because it costs too much to transport the crops out of this region. But along the railway and near large towns there are farms, where potatoes and *livestock* are raised.

THE TOURIST TRADE

The tourist trade is very important because it helps to bring American dollars to Canada, which we can use to buy the things we need from the United States. Every year, American tourists spend close to three hundred million dollars in Canada, almost as much as Canadians spend in the United States. A great many of the tourists go to the Rock Country. Many Canadians spend their holiday there too.

The many lakes and the forests attract fishermen and hunters. The cool air by the lakes seems wonderful to those suffering from the heat in the big cities, and every weekend in the summer hundreds of thousands of people in Quebec and Ontario drive north. Winnipeggers drive east to the Lake of the Woods district. Many people own their own cottages, while others spend their holidays and weekends at one of the hotels or tourist cabins that are plentiful in this

area. Other people camp out in public camping grounds or where they can find unoccupied land.

In the winter, holidayers still go north, though not in as large numbers. Special trains carry skiers to where the ski runs and ski hotels are situated. There are gentle slopes for beginners and steep slopes for the experts. The ski resorts in the Laurentians are especially popular.

THE GEOGRAPHY WORKSHOP

I. LIVING IN THE ROCK COUNTRY

1. Although the Canadian Shield is the largest geographic region in Canada, only a small proportion of the Canadian people live there. Why is this? More people live in the Rock Country now than did at the beginning of the century. Can you explain why more people live there now? Do you think the population of the Rock Country will continue to grow? Why do more people live there in summer than in winter?

2. Are there any things that people living in the Rock Country can do for a living that people in your region cannot do? Name some kinds of work that people living in the Rock Country cannot do in that part of our country.

3. What problems would town planners have to overcome when laying out a townsite in the Rock Country? If you were to build a house there, what are some of the problems that you might have to overcome?

II. TRAVELLING IN THE ROCK COUNTRY

1. Look at a road map that shows the Rock Country. Are there as many roads there as in southern Ontario? the prairies? the mountain region? Newfoundland? Can you explain the differences in the number of roads? Your local motor league may be able to supply your class with maps of the various provinces of Canada. Some service stations have maps of several provinces.

2. Would it cost as much to build roads in the Rock Country as in your home region? Can you explain why?

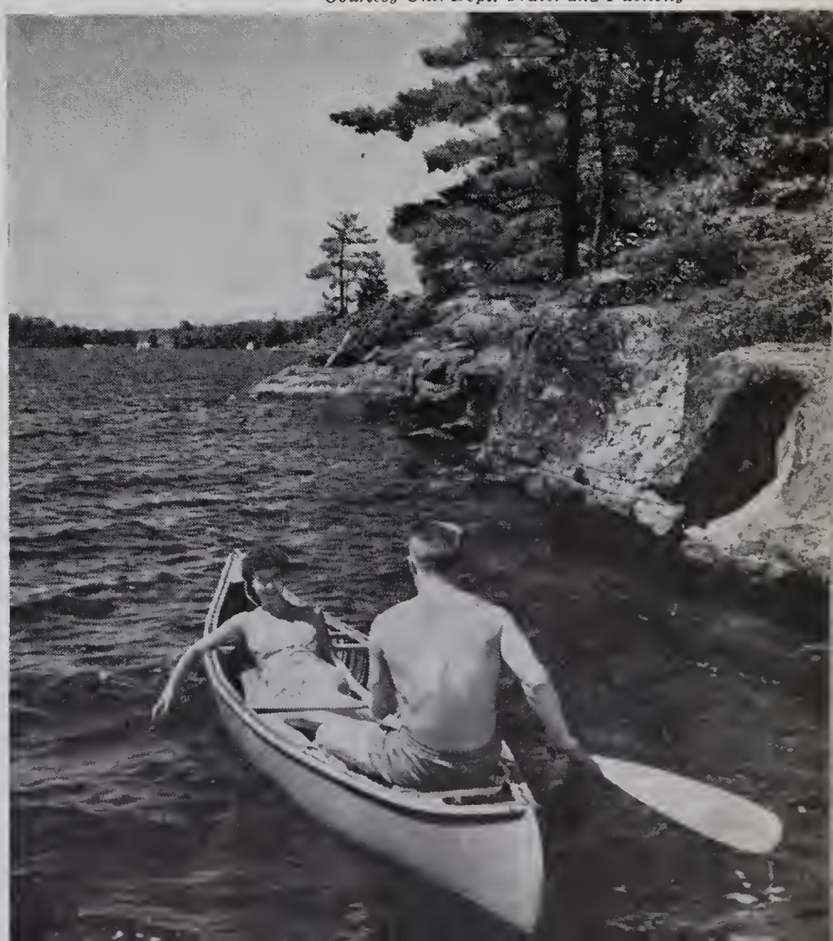
III. THINGS TO DO

1. Write a short story about *bush flying* in the Rock Country, or gather pictures of the kind of airplanes that are used for bush flying.

2. Write a composition on how the Rock Country region affects the way in which you live and the region in which you live. If you live in the Rock Country, tell how it affects the rest of the country. If you could find out from the local mine or lumber mill or other industry exactly what is done with its products, you might be able to answer this question better.

Canoers in one of the resort areas of the Rock Country. Notice the rocks and cone-bearing trees.

Courtesy Ont. Dept. Travel and Publicity





THE ST. LAWRENCE VALLEY

In 1608, the year after the English founded their first colony in America, the French, under Champlain, built their habitation at Quebec. For many years the young settlement barely kept going, but it did manage to survive. Most of the credit for its survival goes to Champlain, who spent his life trying in every way he knew to keep the colony in existence. He did not have an easy time of it, but he did succeed. Today Quebec is the oldest permanent settlement in North America, north of the Spanish colonies. Port Royal and Jamestown, in Virginia, were both established earlier than Quebec, but Jamestown no longer exists, and Port Royal was without inhabitants for some years.

For a hundred and fifty years the St. Lawrence was part of the French *empire,* and today the character of this region is still predominantly French. French is the language most often spoken, the names of the towns are French, the civil laws are based on the French civil law, and the way of life of the French *habitant* still survives. This is a happy life based upon the church and home. However, the old *rural* way of life in Quebec is gradually changing as the young people move to the cities to work in the factories.

WHAT WE CAN LEARN FROM MAPS

1. Turn to the map of Canada on pages 30-31 and put your finger on the eastern end of Lake Ontario. Move your finger down the St. Lawrence River to Quebec City. Your finger has moved over the St. Lawrence Valley, the region we are about to study. By looking at the area colored green on your map, you can see that the valley widens out west of the river to take in Ottawa and farther downstream it widens out east of the river. The land east of the St. Lawrence River is known as the Eastern Townships.

2. Look at the population map on page 35. On the same area that is colored green on the physical map you see many black dots that indicate that this is a region of dense population. Is there any region in Canada that is more densely populated than this? The map on pages 14-15 may help you to answer this question. Why is the St. Lawrence Valley so densely populated? Why does the population not spread farther north and south than it does? If you think of what is to the north and south of the St. Lawrence lowland you will be able to answer this question.

3. On an outline map, put in the rivers that are important to this region. They are the St. Lawrence, the Ottawa, the St. Maurice, and the Richelieu rivers.

The Richelieu River-Lake Champlain *route* is important historically. As you can see from your map, it is the only convenient route through the mountains from the St. Lawrence region into the United States. In the early days of Canadian history, the Iroquois came up this way to attack the French, and the French marched down the same route when they raided English villages and towns. During the American Revolution and the War of 1812, invading armies marched both up and down the Richelieu River. Why is this valley important today?

4. What do the rainfall and growing-season maps tell you about the farming possibilities of this area? Since most river valleys are fertile, you can guess that this is good farm country.

A typical village in rural Quebec

Courtesy Canadian National Railways



LIVING IN THE ST. LAWRENCE VALLEY

WHAT THE LAND IS LIKE

The St. Lawrence lowland is a valley that lies between the Rock Country to the northwest and the Appalachian Mountains to the southeast. The land is fertile and well suited to *general farming.*

The valley is narrowest at the eastern end. Until they reach Quebec, passengers on an ocean-going vessel coming up the St. Lawrence line the starboard side of the deck to see the forest-clad highlands that border the river. In the autumn when the leaves have turned, the view of these hillsides is breathtaking. After the ship passes the great rock of the Quebec Citadel, the passengers see the mountains gradually recede into the background as the valley broadens out to the west; farms, farmhouses, and villages line the shore of the river.

If you go by car along the north shore from Quebec City to Montreal you sometimes seem to be passing through one continuous village. One way to find out when you come to another village is to look for the churches. They dominate the village scene in Quebec.

If you fly over the same area in an airplane you see that the fields are long and narrow and stretch back from the river.

The reasons why the farms are long and thin and the houses stretch in one long line along the river go back to the early history of Canada. For many years there were no roads in this part of the world, and even when roads were built they were not very good. Consequently, everyone travelled by water and sent and received supplies by boat. This meant that every farmer wanted his land to front on the river. If one man had a long stretch of river *frontage,* other farmers could have none. To solve this problem the farms were laid out long and thin. In this way, a number of farmers could use the river easily. The farmers naturally built their houses by the river, and the farmhouses standing close together were the beginning of the line of houses that stretches along the shore today.

FARMING

You know that near large cities the farmers usually grow the things that the cities cannot get easily from far away. Near the cities of the province of Quebec you see *greenhouses* and *market gardens,* cows and fields of hay. These supply the city people with fresh vegetables and milk, which are expensive to ship from a distance.

You are looking across the St. Lawrence Valley. Notice the long narrow fields stretching down to the river.

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We say that the city is a good market for the farmers' products. A market is a place where something can be sold. We may use the word market to describe an exact spot such as a store; we may use it to describe a city or a region where a product is sold. We may also say that people market their products, meaning that they send their products to market. Market is a word we shall need to use many times.

The most important crops in Quebec are hay and clover, oats, potatoes, mixed grains, turnips, *fodder* corn, barley, alfalfa, buckwheat, peas and beans, and sugar beets. You need not remember them all, but if you examine the list closely you will see that most of these crops are used to feed animals. The dairy industry is the most important, but many beef cattle, hogs, sheep, and chickens are raised as well. The Maritimes are noted for their potatoes, but Quebec produces more potatoes than any other province.

On the farms that are not near good markets most of what is produced is used by the farmer's family. Farmers who do not grow more than they can use are called *subsistence* farmers. Their number is dwindling in Quebec as Quebec farmers turn more and more to crops that they can sell, such as tobacco, flax, and sugar beets. These are called *cash crops*. The farmer sells them and then buys what he needs with the money he gets for his products, instead of trying to produce everything he uses.

The French-Canadian farmer has always tended to be very cautious about using new methods, but he is beginning to change. More and more farmers are going to agricultural schools to learn the most up-to-date methods. More and more machines are being used on Quebec farms.

Like New Brunswick farmers, farmers in Quebec who live near lumbering areas often have two occupations. During the winter, when the lumber industry needs men, they work in the forests. When spring comes they return home to look after their farms.

MANUFACTURING

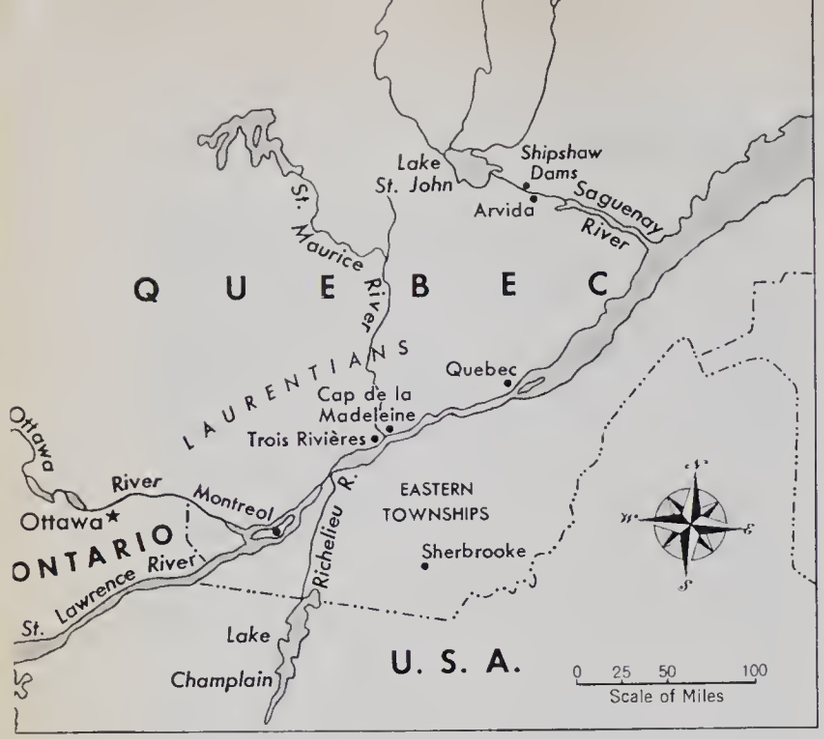
Quebec is traditionally an agricultural province, but during this century, and especially since the Second World War, the amount of manufacturing done has increased rapidly; Quebec is now second only to Ontario in manufacturing, and Montreal is Canada's greatest manufacturing city.

Quebec's most important manufacturing industry is pulp and paper; it is discussed at the end of this section.

Quebec is Canada's clothing and fashion centre. Not only do most of Canada's top fashion designers live in Montreal, but most of the cloth and clothes produced in Canada are made in Quebec. Most of Canada's shoes are also made in Quebec. The following is a list of some of the articles connected with the clothing trade that Quebec makes; synthetic textiles, silk cloth, cotton cloth, cotton thread, cotton yarn, lasts, trees and shoe findings, children's clothing, dyed and finished *textiles*, oiled and waterproofed clothing, oilcloth, embroidery, pleating and hemstitching, artificial flowers and feathers, dressed and dyed furs, fabric gloves and mittens. You need not remember all these, but do remember that many things connected with clothing are made in Quebec.

If you think of the farm products of Quebec you will be able to guess some more of Quebec's industries. The many dairy herds give Quebec the lead in the manufacture of processed cheese. You remember that hogs, sheep, beef cattle, and chickens are raised by Quebec farmers. Slaughtering and meat-packing industries have grown up to prepare them for the consumer. *Consumers* are people like you and your parents who buy things to use, rather than to sell.

In the midst of the farming district of the Eastern Townships are asbestos mines and mills. This interesting rock can be spun and woven into a cloth that will not burn. Theatre curtains, firemen's clothing, and wrappings for hot-water pipes are only a few of the things that are made from it.



The St. Lawrence Valley

Why an industrial area? We know that the St. Lawrence Valley is an industrial area. Now let us try to find the reasons.

If you look at the map on pages 30-31, you will see how close the St. Lawrence Valley is to the Canadian Shield. This means that the factories of Quebec can easily get the raw materials the Shield provides — wood and metals. Metal refining is one of the industries of the St. Lawrence lowland, and many other industries use these metals as raw materials.

Just as important a contribution of the Shield is the water power that supplies the factories with the electricity to run their machines. The Ottawa, St. Maurice, and Saguenay rivers make their way down from the highlands of the Shield in a series of *rapids* and waterfalls. Where the rivers drop the most in height, *powerhouses* are built that serve the St. Lawrence lowlands.

If there are a number of factories in one place, the owners must be able to sell their finished products. If there are no people living in the same region as the factory who will buy the goods, the goods must be sent long distances to places where there are people who will buy them. This is expensive, so factory owners, if they can, always build their factories where a large number of people live. The St. Lawrence lowland has a dense population, so factory owners have built their factories there where they can be near a large market.

Many industries are so large that they produce more than can be sold in one region even if it is densely populated. Because they have to sell their goods outside of their own region, factory owners like to build their factories where there are good transportation facilities, so that they can ship their products out cheaply and easily. The St. Lawrence River-Great Lakes waterway allows goods to be sent cheaply half-way into the continent, as far as Port Arthur and Fort William, and gives easy access to Ontario, which contains more consumers and industrial buyers than any other region in Canada. Ocean-going vessels that take Quebec products all over the world can sail almost to the western boundary of the province, and will soon be able to sail as far as Port Arthur and Fort William.

Montreal is the headquarters of both the Canadian Pacific Railway and the Canadian National Railways; there are good railway connections to all parts of Canada and the United States. Dorval Airport, just outside Montreal, is an extremely busy airport, and businessmen who want to save time can go by plane from there to any major city in the world.

The convenient inland and ocean waterways and land and air routes also allow factory owners to import whatever raw materials they cannot get nearby.

One more thing is necessary — people to work in the factories. A company will not build a factory unless it knows that there will be enough people in the district to run the factory. If there are not enough workers in one area to run all the factories, some of the factories will have to close. In Quebec, the farms are fairly small and the families are quite large. This means that many of the boys and girls must leave home and find work elsewhere. Thus there are enough people available in Quebec to work in the factories.

The reasons that many factories have been built in the St. Lawrence lowland can be listed thus:

1. There are raw materials.
2. There is plenty of electric power.
3. There is good transportation by land, water, and air.
4. There is a good supply of *labor.*
5. There is a large population in the area to buy the articles made in the factories.

Pulp and paper. The closeness of the Shield has made possible the large pulp and paper industry of the St. Lawrence Valley. The raw material, wood pulp, comes from the Shield. The many rivers that flow from the Shield to the St. Lawrence River provide the electricity, the means of transportation, and the necessary water. Some of the wood is used as lumber, but more than half of it goes into the paper mills.

Because paper mills need lots of water they are usually built beside rivers. Lumbermen float the short pulpwood logs down the rivers to the mills, but this is not the main reason for building the mill beside the river. The logs are usually kept floating in water until they are needed. A log is heavy and clumsy, but one man can move it if it is floating in water. Wood for paper must be clean; it is washed in great quantities of water. A great machine grinds the wood into bits; then it is boiled in water with other materials. This takes a large amount of water. The ground wood is mixed with so much water that it becomes like a very thin porridge.

Machines make the paper and roll it into rolls that are bigger than the logs that went into the paper mills. Ships carry most of the huge, heavy rolls of paper to river or lake ports or out to the ocean and the foreign countries that buy Canadian paper. It is cheaper to send heavy, bulky objects by water than by land.

Canada is the world's leading producer of newsprint. The newspapers of our own country are printed on Canadian paper, and so are many of the newspapers of the United States. Europe also buys Canadian newsprint. As we learned in an earlier section, the products of the pulp and paper industry are Canada's leading export.

The Saguenay River. On your population map, page 35, you will see a concentration of population northeast of Quebec City. Through this area the Saguenay River flows for about a hundred miles from Lake St. John to the St. Lawrence River. The upper river is very swift and carries great quantities of water to the St. Lawrence. In the first few miles it drops over 300 feet. You will at once see how valuable this would be for generating electricity. It *generates* as much electricity as the entire city of Toronto and its suburbs could use. This means that every light, washing machine, toaster, stove, and all the factories in Toronto could be operated by the power produced by this one river.

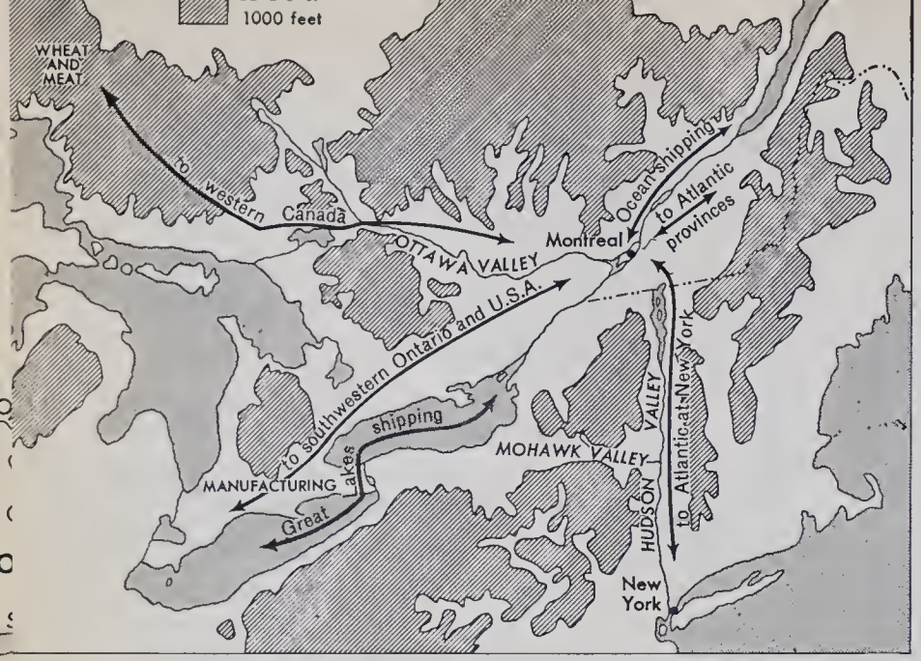
To harness the Saguenay River, the great Shipshaw dams and power plants were built. Canadians in other parts of Canada did not hear very much about this tremendous construction job because much of it was done in secret during World War II. Most of the power is used to make aluminum. Aluminum was needed to make aircraft.

The city of Arvida is the big aluminum refining centre. Since it is a young city and

Rolls of newspaper being manufactured in a Quebec paper mill.

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Montreal as a transportation centre. This map may be a little confusing, but if you examine it carefully, you will notice that most of the main transportation lines follow lowland areas.

grew very quickly, you might expect it to be very untidy and crowded with poor buildings. This is not the case. Arvida was planned ahead of time, and so it has well laid-out streets.

EASTERN ONTARIO

From the maps and from the description in paragraph one, page 59, you know that part of eastern Ontario lies in the region we are studying. Excellent farm land covers the area. Up the Ottawa River is the city of Ottawa, our national capital, and across the river in Hull, Quebec, are large paper mills. In Cornwall, on the St. Lawrence, paper-making and textiles are important industries.

THE TOURIST TRADE

The lovely rural scenery with its background of mountains and river, the historic sites, the quaintness of rural Quebec, the religious shrines, the *metropolitan* atmosphere of Montreal, and the walled city of Quebec bring tourists to this region. Many tourists pass through the St. Lawrence lowland on their way to the more rugged country of the Gaspé Peninsula and the Laurentian Highlands.

CITIES

Montreal. Montreal almost covers a large island in the St. Lawrence River. It became a trading centre early in Canadian history because three rivers, the St. Lawrence, the Ottawa, and the Richelieu, come together close to it. The Indians and French voyageurs would bring their furs down these rivers and meet the fur traders at Montreal. Montreal had one drawback — the captains of ocean-going vessels found it too dangerous to tack, that is zigzag, upstream against the wind among the many shoals in the river. As soon as steamships were invented and used on the St. Lawrence, captains could come straight up the river, and Montreal became an ocean port. Ships of large size still could not navigate the water between Montreal and Lake Ontario because there were so many rapids in the river, but again the difficulties were overcome when canals were built around the rapids. Ocean-going vessels still stop at Montreal because the canals are not deep enough for them. The St. Lawrence Seaway will change this.

Montreal has a fine harbor, but it still has one drawback. During the winter it cannot be used because the water freezes in the docks, and even the river freezes up so that ships cannot sail up and down it.

As you may have gathered, Montreal is Canada's leading port. It is farther inland than any ocean port in North America. This makes it very busy. Wheat from the prairies, bacon and cheese, paper, and many other articles pour into Montreal by lake boat and railway from all parts of the country to be shipped to England, Europe, the eastern United States, the Caribbean, South America, and Africa.

We have talked so much about Montreal being a trading centre that we must be careful not to forget that it is also important for its factories. It is Canada's largest

manufacturing eity as well as its busiest port. Busy faetories as well as full warehouses and a eonstant coming and going of ships are typical of Montreal.

Quebec. Quebec City, the capital of the provinee of Quebec, is not as busy a seaport as Montreal beeause produets eoming from the west reaeh the port of Montreal first and there is usually no reason for sending them any farther. Quebec handles many of the goods that are shipped in and out of the region east of Montreal.

Quebee is the nearest approaeh to an ancient European eity that we have in Canada. In the old seetion of the eity there are narrow, winding streets. The horse-drawn ealèehes, the old stone houses, the cobbled streets, the medieval-like Château Frontenae hotel eombine to give it great charm.

Three Rivers. About half-way between Quebec and Montreal, the St. Maurice River flows into the St. Lawrence. On either side of the mouth of the St. Maurice stand the two eities of Three Rivers and Cap de la Madeleine. There are four big paper mills there, and if you drive through these eities you eannot miss seeing the massive piles of pulp wood ready to be made into pulp. These eities are the largest centres of the pulp and paper industry of Quebec.

The mouth of the St. Mauriec River has been developed into a harbor for large ships beeausc a harbor was needed as an easy outlet for the wood products of the St. Mauriee valley.

Ottawa. Ottawa is in Ontario, of eourse, but it lies in the geographical region of the Lower St. Lawrenee.

When Queen Vietoria ehose this spot on the Ottawa River to be the eapital of Canada, it was only a small lumber town. Now, thousands of people work there for the government. Some work for the Department of Agrieulture, which helps the farmers; some work for the Department of Trade and Commeree, whieh helps people who earry

The Parliament Buildings at Ottawa. The tall tower is the Peace Tower, and the round one houses the Library. The river is the Ottawa River.

Courtesy Ont. Dept. Travel and Publicity



on trade. There are many other departments, and many people work for each of them.

Ottawa is an attractive city. The parliament buildings, the Château Laurier hotel, the government buildings, and the foreign embassies are impressive additions to the usual residential and business districts. The Driveway, which is a park that follows the Rideau River as it winds through the city, is lovely, and in the spring the city seems to be one mass of tulips; these are a gift from Queen Julianna of the Netherlands to the people of Canada for giving her and her family refuge during the years when the Germans occupied her country.

THE GEOGRAPHY WORKSHOP

I. PEOPLE IN THE ST. LAWRENCE VALLEY

1. Many Canadians live in this section of the country. Why is this region more densely populated than most other parts of our country? List some of the things that enable this region to support so many people.

2. Make a list of the things that Canadians living in the St. Lawrence Valley do that are different from what your family might do. What are some of the things that you and your family do every day that the people of the St. Lawrence Valley also do. Which list is longer? This is an exercise that the class might do together, writing the list on the blackboard. If you live in the St. Lawrence Valley, choose another region with which to compare your region.

II. INDUSTRIAL QUEBEC

1. You know now that this region is one of the most important industrial regions in Canada. Make a list of all the things in your classroom that were probably manufactured in this region. To start this exercise you might check back in your book to see what kinds of things are made in the factories in this part of Canada. Look in the *Canada Year Book*, too, to find out what kinds of things are made there.

2. Make a tabletop display to show the industries of the St. Lawrence Valley.

3. Suppose that you and your classmates each represent one industry of the St. Lawrence Valley. You are all going to attend a big convention of Canadian industry to be held in Montreal. Prepare a two-minute talk to give at this convention telling the members from all over Canada about your industry. Tell where you get your raw materials, where your power comes from, where you sell your products, as well as anything else about your industry that you can find out. Tell why you built your factory in this region.

The City of Quebec. The highest building in the picture is the Château Frontenac.

Courtesy Office Provincial de Publicité Québec





THE LAKE PENINSULA

It was the American Revolution that gave southern Ontario its start. In 1775, when the American Revolution broke out, southern Ontario was empty of white men, except for a few hunters and traders. By 1800, the districts around Cornwall, Prescott, Kingston, Toronto, Niagara, Port Dover, and Windsor were thriving communities. The people who first settled in these places were refugees from the United States — United Empire Loyalists they were called. These were the people who wished to continue to live within the British Empire and under a British type of government. During and after the American Revolution, they came north to what was then known as British North America, and through great hardships made homes for themselves in the wilderness. Once there were sizable English-speaking settlements in British North America, other *immigrants* were willing to come over from Britain. People from the United States also continued to come north across the border to settle. In time, settlements spread out over the Lake Peninsula.

Many immigrants still come to settle in the Lake Peninsula. Today they no longer come only from the United States and Great Britain. Many Europeans have settled there, especially since World War II.

WHAT WE CAN LEARN FROM MAPS

FINDING THE LAKE PENINSULA

1. Find Lake Huron, Georgian Bay, Lake Erie, and Lake Ontario, and put them on your outline map. These three lakes almost surround the land that we are going to study now. It is sometimes called the Peninsula of Ontario. If you draw a line through these lakes and one from the southeast tip of Georgian Bay to Kingston, on the eastern end of Lake Ontario, you will have traced the outline of this region. The map on page 67 shows the area you have outlined.

2. Look at the population maps on pages 14-15 and 35. These show that the population is very dense, actually the densest in Canada. This area contains several large cities — Toronto, Hamilton, London, Windsor — and many smaller cities and towns. Put on your map the four cities named. The farm population is dense, too.

COMPARING THE LAKE PENINSULA

1. Compare the Lake Peninsula with the St. Lawrence Valley on the rainfall, growing-season, physical-political, and vegetation maps. You see that these maps show little difference between the two regions.

2. Look at the map of North America on pages 22-23. Find the important cities and towns in the United States that are on or near the same parallel of latitude as Windsor, the southernmost city in Canada. Now draw a line from Seattle across the continent along its parallel of latitude. See how much of Canada is south of the line you have drawn. Sault Ste. Marie, Montreal, and even Quebec are farther south than Seattle. We are so used to thinking of the United States as being south of us that we often do not realize that some states are farther north than the region where most Canadians live.

FARMS AND FACTORIES

ANIMALS AND SPECIAL CROPS

Southern Ontario is a rich agricultural region. Everywhere you go you will find farms, except, of course, where there are cities. Many people are disturbed when they think of how much fertile land is being used merely for houses and streets, but every year more and more Ontario land is being sold by the farmers and turned into residential districts or industrial sites, for Ontario is an industrial region.

If we take a drive in the country we can see what most Ontario farms look like. Within the distance of a mile we shall probably pass three or four farmhouses. They will likely be set well back from the road, their wide lawns shaded by big trees. Near each house will be a group of farm buildings. The largest one is, of course, the barn; its lower floor contains stalls for the animals and the upper floor, called the loft, is used to store hay.

The tall, round building beside the barn is a silo. During the summer, the farmer fills it with chopped-up corn stalks or other green feed. The fodder will keep for the animals to eat in the winter. Fodder is feed for horses and cattle.

Most of the crops you see are used to feed animals. Many farms have corn fields and fields of plants grown to make hay. Most farmers raise more than one kind of hay; clover, timothy, soybeans, and alfalfa are the most common fodder crops.

Part of every farm is in pasture. From early spring until late fall the cattle spend nearly all their time in the pastures. Most



Courtesy Ont. Dept. Travel and Publicity

Loading sheaves on a farm in the Lake Peninsula.

farmers keep a few dairy cows. Many of them keep beef cattle as well. They do not always raise these animals themselves. They sometimes buy calves that were born in the West. The farmers feed the calves over the summer and then sell them for more than they paid for them.

Nearly every farmer has a flock of chickens and some hogs; some have a flock of sheep and a few geese or ducks. Hogs get part of their summer feed from pastures, but they must be fed corn too, if they are to grow fat.

This type of farm is fairly typical, for Ontario farmers do not raise only one crop or one type of animal. They raise oats, buckwheat, hay, wheat, beef cattle, dairy cattle, pigs, chickens, and perhaps some fruit and vegetables. However, the farmers are tending to specialize more in the plants and animals that they can raise best. The type of soil on his farm and the distance from markets affect the farmers' choice of crops and animals.

The farms in the Lake Peninsula do not look at all like the farms on the prairies; they are smaller because it takes more labor to run a farm in the Lake Peninsula, and because usually more money can be made from one acre in southern Ontario than from one acre in the western plains. The fields are smaller because the yield per acre is higher and the land is, on the average, more expensive. Since farmers raise a variety of crops they cannot use the whole farm as one or two large fields in which to grow one crop. And there are more trees. Nearly every farm has at least one wood lot, some small and some fairly large. These wood lots are very important for they help to prevent *floods* and *erosion*. If the trees were not there to hold the earth and water, the rain would wash away the *topsoil*, and rivers and streams would dry up in dry weather. The farmers also use their wood lots to supply their firewood, for many farms still use wood for stoves and furnaces. Often the trees are near streams or on slopes. This land may not be good for farming, and it is there that the danger of erosion is the greatest.

Naturally there will be many dairy herds in southern Ontario. Toronto alone contains over a million people; this is more than the population of New Brunswick and Prince Edward Island combined. Toronto and the many other cities and towns of southern Ontario provide a good market for the many

farmers who keep dairy cows to supply the cities with fresh dairy products.

Because the people in the towns and cities also need fresh vegetables, you will find fields of carrots, lettuce, peas, beans, and other vegetables all through this region. Market or *truck gardens* are those in which are grown vegetables, and small fruits, such as strawberries.

Fruit and tobacco. There are some sections of the Lake Peninsula in which special crops are grown. Much of the tobacco produced in Canada is grown in the Delhi-Simcoe region. If you look at the map you will see that this area is in the most southerly part of Canada. As you drive through this country you see the kilns that are used to dry the tobacco.

Between London and Windsor most of Canada's corn crop is grown. If you drive through this region, look for fields of corn or corn stored out-of-doors in bins made of slats of wood and wire. You can see the corn between the wooden slats.

The most important region of special crops is the Niagara Peninsula fruit belt. The Niagara Peninsula is the piece of land that lies between Lake Ontario and Lake Erie. You may wonder why the Niagara Peninsula is such a good fruit region. The reason is that it is bounded by two large bodies of water, which reduce the danger of unexpected frost.

Large bodies of water stay cold for a long time in the spring. At this time Lake Ontario and Lake Erie cool the air around them so that the fruit blossoms in the Niagara Peninsula do not open too soon. By the time the water has warmed up, there is no longer much danger of there being a hard frost.

Most *cool-climate fruits* do not need a long growing season, but they do need a safe one. Fruit trees, grapevines, berry bushes, and strawberry plants begin to bloom with the first warm weather. In most of eastern Canada the spring weather is very changeable. Early in the spring there may be a few days of warm weather; out come the fruit blossoms. But the growing season has not really begun, and a cold snap soon follows the warm weather. Just one frosty night may be enough to spoil the fruit crop, for the frost kills the fruit that is beginning to form at the centre of the blossoms on the fruit trees.

A vegetable farmer need not plant his vegetables until the danger of frost is past, but a fruit farmer's trees, bushes, and vines are already planted, and there is nothing that he can do to keep them from beginning to blossom too early. There is nothing he can do, that is, except choose the right location for his farm.

The Lake Peninsula.



MANUFACTURING

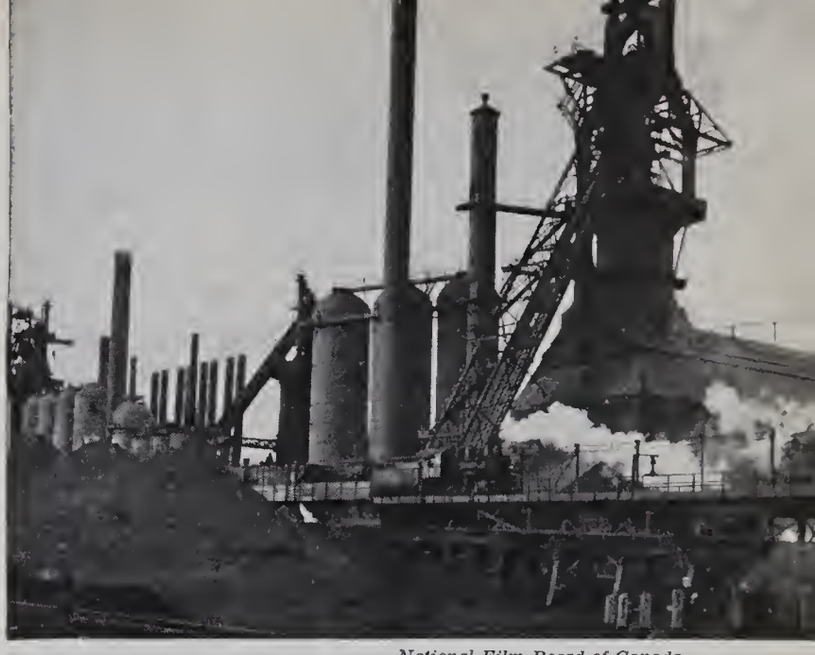
Now that you have studied the St. Lawrence Valley, perhaps you can decide why southern Ontario is the greatest centre of manufacturing in Canada. Some of the reasons you will not know, but you should be able to figure out most of them.

Raw materials. The Lake Peninsula, like the St. Lawrence Valley, depends upon timber and minerals



Courtesy Ont. Dept. Travel and Publicity

A factory processing farm produce. The women are bottling pickles.



National Film Board of Canada

A steel mill in Hamilton. Other factories will use the steel manufactured here.

from the Shield. The pulp and paper industry is not quite as important to Ontario as it is to Quebec, but the metal refining industry is even more important.

The iron and steel industry is especially vital to Ontario. It has always been important, but today the industry is bigger than ever. Since the beginning of World War II, the production of steel in Canada has more than doubled. No other province comes near to equalling southern Ontario in its output of steel. This means that the industries that use steel will establish their plants near the steel mills in Ontario. All the automobiles that are made in Canada are made in Ontario. Agricultural implements, such as tractors, reapers, and combines, instead of being manufactured on the prairies where many of them are used, are nearly all made in the Toronto-Hamilton district because the necessary metals are available there and because southern Ontario is a large market. Heavy machinery of all sorts, refrigerators, bicycles, and many other goods are also made from the metals refined in southern Ontario and mined in northern Ontario and nearby regions.

The many farms of southern Ontario also help the manufacturers. One of the biggest industries in this region is slaughtering and meat packing. Butter and cheese factories, flour mills, vegetable and fruit canneries, jam factories, and the wine industry all depend upon the farmers for their raw materials.

We have mentioned the automobile, slaughtering and meat-packing, pulp and paper, metal refining, agricultural equipment, and machinery industries. These are some of the more important manufacturing industries but by no means all. If we were to list all the goods that are made in southern Ontario we would use up a great many pages. Here are a few samples to give you some idea of the variety of goods manufactured there: petroleum products, books, magazines, jewellery, sporting goods, batteries, scientific equipment, soaps, carpets, starch, synthetic rubber, leather, ink, breakfast cereals, rope, toys, clocks, furniture, clothing. Many of the goods manufactured there are made nowhere else in Canada.

Hydro-electricity. In any district in which the power to run machines costs too much there will be few factories. Factories use so much power that if it is expensive the price of the goods will have to be raised, and then the manufacturer will not be able to compete with manufacturers who can make the same articles for less.

The one thing that the St. Lawrence Valley-Great Lakes lowland area lacks is coal. Iron and steel companies must have

coal to use in the furnaces that *smelt* the ore. Canada has coal far away to the west in Alberta; there is coal in the east, in Nova Scotia. But the coal mines of Pennsylvania in the United States are much closer, and the steel manufacturers and consumers of this region buy their coal from mines in Pennsylvania.

Luckily, there is plenty of hydro-electric power available in southern Ontario. At Niagara Falls the water of the Niagara River tumbles over a high cliff. Some of the water is taken out of the river before it goes over the falls and is sent through powerhouses. As the water flows down big tubes, it turns great turbines that generate electricity. The same thing is done on the Ottawa River. Places that do not have enough falling water have to use coal to make *steam power* to turn the generators, and this is more expensive than using water power. Even in regions with hydro-electric power there are usually some steam generators.

New power plants are being built in southern Ontario because there are so many new factories going up that the old generating stations would not be able to make enough electricity to run them all. One of the greatest new power plants in Canada is being built on the St. Lawrence River in connection with the building of the St. Lawrence Seaway.

Electricity is taken by wires from the powerhouses to the homes and factories that use it. All through the industrial region you may come across transmission lines that carry the electricity from the powerhouses.

TRANSPORTATION AND TRADE

Ontario is ideally situated as far as transportation is concerned. All it lacks is an ocean port, and the St. Lawrence Seaway will make that possible. The Great Lakes and the St. Lawrence River allow goods to be transported easily and cheaply to a number of places. Railway lines and highways honeycomb the area.

Trade is the word we use to describe buying and selling — the exchange of goods. This does not mean just the selling of goods in stores to the consumers; it also means the buying of raw materials by a manufacturer; it means the taking of goods from one country to another or from one part of a country to another part of the country.

Without trade Canada could not have a large manufacturing region. Most of the manufacturers buy some raw materials outside of their own region and must sell some of their products to people in other regions.

Southern Ontario has many roads and railways. They are not just for people who travel on business or for fun. On the railways long freight trains bring food and raw materials for the factories, and carry away the manufactured goods. Perhaps they take them to Montreal to be shipped overseas; perhaps they take them to the United States border where the freight cars will be attached to United States trains. Perhaps they carry them to a lake port to be transferred to a boat, or perhaps they carry them westward to the prairies.

Many of the roads in southern Ontario have been built so that tourists may go north easily, for the tourist trade is one that brings a lot of money to people in Ontario. But the roads are used for more than travellers. Whenever you drive along these highways you will see tourists, people going to visit friends who live in other towns, travelling salesmen, businessmen, and large trailer trucks hauling goods from one part of the country to another.

The St. Lawrence-Great Lakes route. The importance of the Great Lakes and the St. Lawrence River can hardly be overestimated. The Detroit River, which helps to join Lake Huron to Lake Erie, is the busiest river in the world. This fact will give you some idea of how many boats use this waterway. The picture on page 73 shows a lake freighter. These boats were especially designed for lake travel. They

have a shallow draft so that they can go through the canals, and they have lots and lots of room for cargo. They can be built like this because they do not have to withstand the heavy seas of the open ocean.

Wheat and ore are the two most important products carried by the lake freighters, though of course they carry other things as well. It would cost a great deal more to send the heavy, bulky goods by train or by truck. Think how many trucks would be needed to carry as much wheat as can be loaded into one freighter.

Before the Great Lakes and the St. Lawrence River could become really useful, canals had to be built. The first one to be built in Canada was the Lachine Canal. It goes around the rapids just upstream from Montreal. The second one was the Welland Canal, which takes the ships around Niagara Falls. These canals were very important at the time that they were built, for there were no railways and the few roads that existed were not very good. They are still important today, even though there are plenty of railways and roads.

The rapids in the St. Marys River that flows between Lake Superior and Lake Huron had to be by-passed before boats could come from the Lakehead, that is Port Arthur and Fort William, to the east. This canal was built after the Lachine and Welland canals because, until people began to live in the west and export large quantities of wheat and iron ore, there was not much need of a waterway from the Lakehead eastward.

Many canals have to have locks. The locks act like stairways, but each stair is like a big tank with gates at either end. Two pairs of gates across a canal make a lock. We call them gates, but they are really solid doors. The water above the lock is higher than the water below the lock. Going downstream, a boat goes through the open upper gates into the stretch of water inside the lock. When the gates are closed, the water inside the lock is lowered slowly to the level of the water below the lock. Then the lower gates are opened and the boat goes into the lower level. The opposite operation takes place when a ship goes upstream. Locks, of course, are used only to by-pass falls or rapids.



Courtesy the Ont. Dept. Travel and Publicity

A ship going into a lock in the Welland Canal. The gates will close behind it and the level of the water will be raised, raising the ship to the next level.

THE TOURIST TRADE

The people of southern Ontario are fortunate to be near the best developed part of the Rock Country vacation area. Not only do they make money by looking after the tourists who pass through on their way to Muskoka or Algonquin Park or the other resort areas, but also they themselves can go easily to cottages up north.

Many people do not go even as far as the Rock Country; thousands go to the beaches around Lake Huron and Lake Erie.

Ontario has built many roads and widened many others so that tourists will be able to



Transportation routes in the Lake Peninsula. Which cities are the most important for transportation?

go north in comfort, but the number of people driving north continues to increase so that, in spite of all the government has done, there are still traffic jams on holiday weekends.

CITIES

Toronto. Toronto is the most important city in the Lake Peninsula and is the capital of Ontario. More people live in Toronto and its suburbs than live in any of the provinces, with the exception of Ontario, Quebec, and British Columbia.

If you look at the map on this page you will perhaps see why so many people have gone there to live. Toronto is situated at the place where routes from the north, east, west, and south meet.

The map shows that Toronto has good water and land transportation. It is opposite the north end of the Welland Canal, and directly south of the tip of Georgian Bay. This means that it is directly south of the land routes from the Shield and from the west, and is situated where the routes from the north and west meet the water routes of Lake Ontario. The land routes from and to western Ontario pass through Toronto, and some of the routes to and from Montreal also pass through Toronto.

Because it is easy to get raw materials to Toronto and to send out finished products from Toronto, many factories have been built there. Because the people who work in the factories provide a good market, more factories are built and Toronto continues to grow.

Because so many people live in Toronto and because it is central to so many other people throughout Ontario, stores of all sorts find it a good place in which to sell their wares.

Almost anything you can think of is made and sold in the Toronto area. Airplanes, books, farm machinery, furniture, wire, textiles, and radios are only a few of the things made there.

Hamilton. Hamilton is a steel city. Fourteen steel mills are situated there. These mills alone are enough to make Hamilton an important industrial city, but there are many other kinds of factories there as well.

Where is Hamilton? When you locate a city you should not merely learn at what spot it is. You should try to find out what the location has to do with making the city what it is. What has location to do with making Hamilton a steel centre?

Coal comes from Pennsylvania on the south side of Lake Erie, and iron ore comes from around Lake Superior. Both iron ore and coal are heavy, bulky commodities and are therefore shipped by boat. Hamilton has an excellent land-locked harbor. It is near the coal fields, and the iron ore can reach it easily. Hamilton is also in the middle of Canada's biggest industrial area and therefore in the midst of the industries that use iron and steel. After the iron has been smelted in the huge blast furnaces, the iron and steel are sent to factories all over southern Ontario. The map on this page shows you that the land routes going around Lake Ontario pass through or near Hamilton.

Besides being an industrial city, Hamilton is a market centre. It is in the midst of very rich farm land and provides a good market for truck and fruit farmers. Several times

a week farmers bring their produce to the Hamilton Market, where stores and housewives buy them.

Windsor. If you look again at the map on page 74, you will see the city of Windsor on the Detroit River. This city is another industrial centre. It concentrates on steel goods, particularly automobiles.

Windsor is well situated for transportation. The Detroit River runs past it, and because the river and Great Lakes are a barrier to land traffic it is an important border crossing point. As you go east, the next place where you can cross into the United States is at Niagara, about 200 miles away. Cars and trains go under the river in tunnels as well as over it on bridges.

London. Look at your map again and find London. Being central to much of the farming area of the Lake Peninsula, it, like Hamilton, is a market city. This inland city is halfway between Toronto and Windsor. Because it is central to the land routes of western Ontario it is a good place to establish wholesale firms and food industries. Quite a few people work there manufacturing such things as refrigerators and knitted goods, and many more work for insurance companies and other financial companies.

Many smaller cities. There are many small industrial cities scattered through southern Ontario. If they were on the prairies they would be considered quite large but in this densely populated region they seem fairly small.

Kitchener-Waterloo, Guelph, Brantford, Peterborough, and Preston-Galt are all inland industrial cities. On the Great Lakes waterway are a number of small industrial cities and ports, such as Sarnia, Oshawa, and Kingston. The city area of St. Catharines-Thorold has been growing steadily because the Welland Canal is nearby.

THE GEOGRAPHY WORKSHOP

I. FOOD FOR SOUTHERN ONTARIO

Make a list of the main items of food used by most Canadians. Where do the people of the Lake Peninsula get the things that you have listed?

II. TRAVELLING IN SOUTHERN ONTARIO

1. Get a road map of Canada. From this map you can see that the Lake Peninsula has more first class roads than any other part of Canada. Why is this?
2. This part of Canada also has more automobiles than any other part of Canada. Can you find out how many cars are registered in Canada? in Ontario? You can get this information from the *Canada Year Book*.
3. This region uses trucks to haul freight more than any other region does. Can you explain why? What are the advantages of using trucks instead of trains? What kinds of freight would be shipped by train? by ship? Make lists of these and explain the reasons for using each shipping method.

III. CITIES

On a map of this region mark all the cities of more than 30,000 people. You can find the size of the cities from the *Canada Year Book*. Why have these towns grown up at these places?

IV. INDUSTRIES

What industries are found only in this region? What is special about this region that leads so many industrialists to build their factories there?



THE CENTRAL PLAINS

Until the 1880's, the Canadian prairies were practically deserted. At Winnipeg there was the Red River Colony started by Lord Selkirk, and at various places along the rivers there were fur-trading posts, but except for these isolated spots of settlement and the various Indian encampments the west was empty.

Until the Canadian Pacific Railway was built it was too difficult for settlers to get to the west, and once they were there, there was not much they could do to earn a living because they could not send out the food they grew. Once the railway allowed people and goods to move freely in and out of the prairies, immigrants began to come in large numbers. In Europe and even in eastern Canada and the United States there were landless men who wished to have land of their own. These men came to the prairies and began to fill the empty land.

The settlers in the Canadian west raised wheat and other grains. They grazed cattle on the prairie grass. The west was originally a farming area. More recently, factories have been established in the larger cities of the Prairie Provinces. And, of course, the discovery of *oil* and *natural gas* has introduced important new industries to the prairies.

WHAT WE CAN LEARN FROM MAPS

FINDING THE PRAIRIES

1. Look at the black section on the map at the top of the opposite page. This region is part of a great plain, which extends from the mouth of the Mackenzie River, on the Arctic Ocean, through Canada and the United States to the Gulf of Mexico.

2. Put on the outline map of this section the lakes that border it and the important rivers that flow through it. The rivers will be the Red River, the Assiniboine River, the North and South Saskatchewan rivers, the Peace River, and the Athabasca River. Notice that most of the rivers of the plain eventually join either the Mackenzie, which carries the water to the Arctic, or the Nelson, which empties into Hudson Bay. The lakes are the same as those along the western edge of the Canadian Shield, plus Lake Winnipegosis and Lake Manitoba.

3. Look at the physical-political map. It shows that the prairie lands slope upward from east to west, but there are few large hills until the *foothills* of the Rockies. The prairie land rises from 800 feet near Winnipeg to 3500 feet around Calgary, though the land does not look any higher at Regina than it does at Winnipeg.

4. Study the vegetation map on pages 12-13. How much of the three "Prairie Provinces" is prairie?

FARMING AND RAINFALL

What do the rainfall and growing-season maps on pages 8-11 tell about the prairies? The rainfall is too light and the growing season is too short for many crops. Fortunately, conditions on the prairies are good in most places for growing wheat. Not only is there enough rain but also it comes at just the right time. Most of the rain falls in the spring and early summer. During the latter part of the summer, when the grain is ripening and being harvested, the weather is dry and sunny.

One reason why the prairies are fairly dry is that it rains so much in the mountains that by the time the air from the Pacific Ocean reaches the prairies there is not too much moisture left in it.

Your map shows you that more rain falls in Manitoba than in Alberta. If your map were more detailed it would show you that the amount of rain increases gradually as you go from west to east. Where does Manitoba's moisture come from?

The rainfall, or lack of it, determines what may be done with the land. Lack of rain has made some parts of the prairies *semi-desert*. Where the climate is too dry even for wheat, the farmers either irrigate the land if there is some source of water, or use it for grazing.

MACHINERY AND RAILWAYS AFFECT POPULATION

1. The population of the west is not large in spite of the fact that much of the land is cultivated. The cities are not large, and fewer people live on the farms than would live on the same amount of land if it were in one of the eastern provinces. This is because the land is farmed *extensively*. This means that one man can do all the work that is needed for a very large amount of land. The flatness of the land, which lends itself to the use of machinery, and the small amount of labor needed for wheat make this possible. When we study Europe we shall find out about *intensive farming*.

2. If you compare the population map on page 35 with the railway map on page 82, what do you find? Most people live near the railway because, to make a living, they have to sell most of their crops outside their own region. To do this they must live near a railway that will take their goods to market.

THE PRAIRIES

WHAT THE LAND IS LIKE

The picture on page 79 is fairly typical of the whole region. If you cross the prairies by car or train you pass through mile upon mile of flat or slightly rolling land, covered with grain. There are few trees. The first settlers built their houses of sod because there were no other materials with which to build.

As you know, the prairies are not all lowland; parts are fairly high above sea level. Into this high plain various rivers have cut river valleys. Trees grow in the river valleys. West of Calgary the land becomes hilly as it begins to rise to the Rocky Mountains.

The southern prairies are mostly grassland, but as you move northward you find yourself surrounded by *parkland,* that is grassland and scattered clumps of trees. The parkland gradually merges into the cone-bearing forest that continues northward into the Shield until the tree line is reached.

CLIMATE

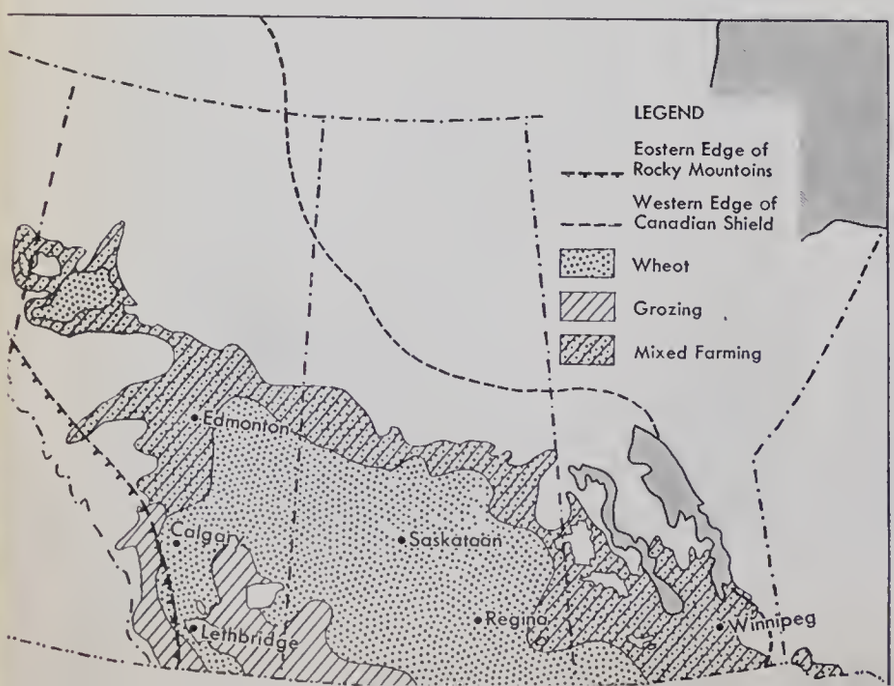
The prairies have what is known as a *continental climate.* They are very cold in winter and quite hot in summer. Lands that are near large bodies of water do not have the extremes of temperature that lands in the middle of large land masses do. If you look at temperature maps of the world for June and January, you will see that this is so.

Although, even in the southern prairies, the winter temperature often goes as low as 40° below zero, and sometimes even to 50° below zero and lower, the dry air makes these temperatures less painful than they would be on the coast or near the Great Lakes. Nevertheless, 40° below zero is cold. The heat of summer is also more bearable because it is dry and not the sticky kind of heat that some other parts of the country receive.

Strong winds are another characteristic of prairie weather. On the open prairies there is nothing to break the force of the wind or slow it down or give shelter as is the case in forested or semi-forested regions.

A welcome winter wind is the chinook. Chinook is an Indian word that means "snow eater." It is a warm, dry wind that blows east from the mountains and evaporates the snow. A chinook can change the temperature from 40° below zero to 40° above zero in a few hours.

Types of farm land in the West.



LARGE FARMS AND RANCHES

Wheat. Farming has always been the most important industry of the Canadian west but, except in Saskatchewan, it has now taken second place to manufacturing. The most important crop of the prairies is, of course, wheat. Though undoubtedly wheat is king in the west, we must not forget that much oats, flax, and barley are also grown.

Several factors combine to make the prairies a good wheat region. The soil is very fertile. Even with-

out intensive farming, the land yields a large number of bushels per acre. Some of the earth that was scraped off the Shield by glaciers was deposited on the prairies. A large body of water called Lake Agassiz once covered much of Manitoba. The earth deposited at the bottom of this lake was very rich.

Because the land is so flat and unbroken and because the grain ripens all over a field at the same time, machinery such as combines, which cut and thresh the wheat all in one operation, can be used. This enables two men to harvest many acres by themselves, thus reducing the cost of the grain.

Prairie weather is usually good for wheat, but unfortunately the weather is sometimes unusual. When the rainfall is below normal, the farmers have a poor harvest, especially those who in a good year have barely enough rain. Farmers are beginning to realize that land that is in danger from a slight change in rainfall should not be ploughed, but should be used for pasture.

Saskatchewan produces more wheat than the other two Prairie Provinces. If you look at the map you will see why. Saskatchewan contains more grassland than the other provinces. The Shield takes up part of southern Manitoba, and the southern border of Alberta is shorter than that of the other provinces; the foothills of Alberta are not used for wheat, and other parts of Alberta are too dry for crops. Although Alberta produces only about half as much wheat as Saskatchewan, it still produces more wheat than any other province except Saskatchewan.

The prairies grow an excellent quality of wheat. Canadian hard wheat is among the best in the world for making bread flour, and therefore greatly in demand. Red Fife was the first variety of wheat developed in Canada to become famous. It was discovered by accident, but since then men have been working continuously to grow better and better strains of wheat. They have developed wheats that will resist rust, a disease that was destroying the wheat crops; and they have developed a good variety of wheat that will ripen more quickly than most strains of wheat. This discovery meant that wheat could be grown farther north than ever before. Up until then the shortness of the growing season

The farmer is combining swathed wheat. Notice the elevators in the background.

Sask. Govt. Photo by Mike Kesterton



had kept the wheat farms confined to the southern edge of the prairies. Now, wheat is grown as far north as Fort Vermilion in the Peace River district. Find it on the map. The big problem of the farmers of that region is how to get the crop to market without transportation costs making the price of the wheat too high.

However, most of the wheat is still grown in the southern parts of the provinces. In the parklands mixed farming is more common.

Irrigation. Large areas of southern Alberta are too dry for wheat. This land is often very fertile, and since the snow and rivers of the Rockies are not very far away, men have found that it is worthwhile to irrigate the land. The rivers, fed by the melting snows and glaciers, flow all summer, so that the supply of water for irrigation is never stopped. By building dams, enough water is collected to supply the canal networks that keep thousands of crop acres watered. As a result, crops grow on land that could otherwise be used only as rather poor cattle *range*. Today about 790,000 acres in Alberta depend upon irrigation rather than rain for their moisture.

Alfalfa, for hogs and dairy cattle, and sugar beets are the crops grown in the irrigated land. Sugar refineries have been built and towns have grown up to serve these areas that without irrigation would be practically deserted.

Cattle on their way to summer pasture in Alberta. Their journey will take four days.

National Film Board of Canada



Cattle. Herds of cattle as well as fields of wheat are familiar sights in the west. Where the land can be used for either cattle or wheat the prairie farmer will usually make more money if he sows grain, but there is much land that is not ideally suited to crops. In the foothills, and where the rainfall is light, the land is not ploughed. Instead, cattle and sheep are turned loose to feed on the grass that grows there.

Alberta is the domain of the Canadian cowboy. There he looks after the great herds of cattle that wander over the range searching for food. In Alberta, the Calgary Stampede is held every year. This is a rodeo in which the cowboys compete with each other in riding bucking broncos, roping steers, and many other events.

It takes more land in Alberta or Saskatchewan to support a herd of cattle or a flock of sheep than it does in Nova Scotia or the St. Lawrence lowlands. Land that is too dry to grow wheat will not grow as much grass as the moist climate of the Maritimes produces. This is why the cattle *ranches* of the west are so large, while in southern Ontario, which has more cattle and sheep than Alberta, you never hear of a ranch because the cattle can get all the food they need from one or two fields. Farmers, instead of cowboys, look after the cattle in the east.

Erosion and drought. You probably know that it is only the topsoil, the soil that is on the top of the earth, that is fertile. If this topsoil is removed, the earth that remains will not produce as much or as good grain. The soil of the prairies was extremely fertile when white men first came to the prairies, but in some places the soil has been blown away or washed away or damaged by poor farming methods.

If land is overworked, it will produce good crops for several years and the farmer

will make a lot of money; but if all the good is taken out of the soil and nothing is put back in, it will lose its fertility.

When land that is too dry is ploughed, the wind blows the dry soil away. If the grass is eaten off the hills because too many cattle or sheep have been pastured on it, the rain washes away the soil. The same thing happens in forested areas if the trees are cut down, for the tree roots and the roots of the grass hold the earth in place. When the roots are no longer there, the earth is easily washed away.

In the *drought* years when the rainfall was too light for much to grow, many farmers gave up and abandoned their farms. They left their fields with no vegetation on them and the prairie winds whipped up the earth into huge dust storms that carried the soil away.

Soil erosion is not a problem peculiar to the west. It exists in all farm areas. Large areas of Canada and of other parts of the world have been ruined by soil erosion. More farmers today are aware of the danger of losing their good soil. They now plan the use of their land to bring them the most money, not just for a few years, but over a period of years. If a farmer looks ahead, he will look after his land.

It is not only drought and erosion that hurt crops. Too much rain at the wrong time may mean that the quality of the grain will be poor, in which case it will bring a lower price than usual. Hail storms may flatten the grain just when it is ready to be harvested, or a plague of grasshoppers may eat the wheat. The prairie farmer has had to endure many tragedies. However, even in bad years grain is harvested, and there are many good years.

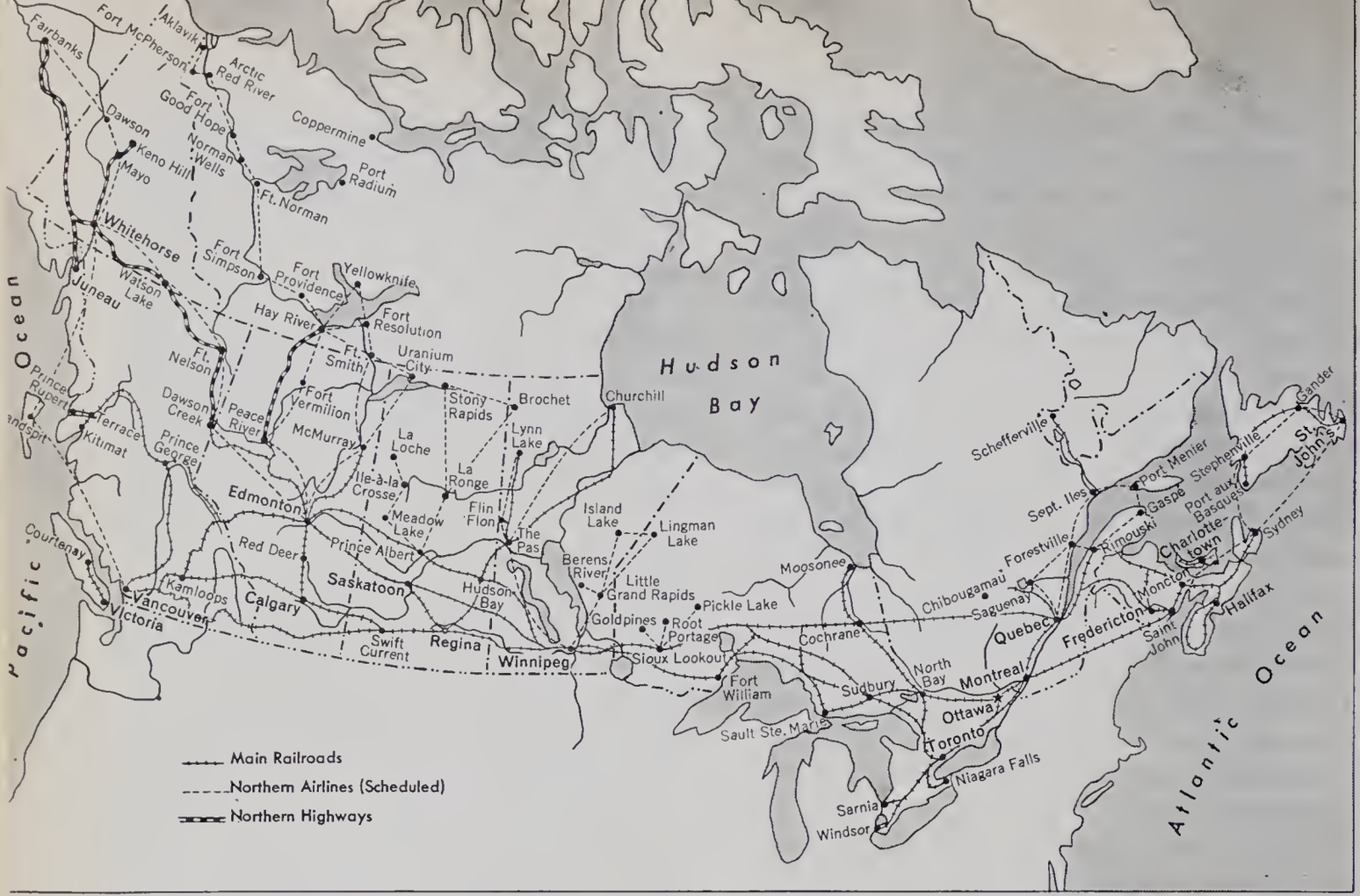
The wheat crop is important to the rest of Canada as well as to the prairies. If wheat is not sold abroad there will be less money coming into Canada; and when there is less money in the country, wages may fall and there will be fewer jobs for everyone. This is why world trade, not just in wheat but in everything, is so important to Canada. More than most countries, we depend upon exports for our national prosperity.

MINING

We have not been used to thinking of the prairies as a mining region, but recent discoveries in Alberta and Saskatchewan have made them one. The first mines of any importance there were coal mines. Alberta is Canada's leading producer of coal, with Saskatchewan third. Alberta also is estimated to have by far the greatest reserves of coal. In recent years, the output of coal has been reduced, and its place has been taken by oil and gas and hydro power.

In recent years, Alberta has become a boom province, for oil has brought prosperity to this part of the country. Oil was first discovered in the Turner Valley near Calgary, which was for some time the only producing field. When the fields at Leduc and Redwater near Edmonton were discovered, Alberta became in reality an oil province. In 1942, when Turner Valley was the only oil field of any size, Canada's output of *crude oil* was 19,364,796 barrels. In 1949, when both Leduc and Redwater were in production, the output was 21,305,348 barrels, and in 1951 it was 48,000,000 barrels. Since then, many new oil fields have been discovered, and Alberta now accounts for ninety-five per cent of the total Canadian production. Saskatchewan and Manitoba also may soon produce larger quantities of petroleum.

Natural gas is usually found in the same regions as oil, and Alberta is no exception to this rule. Natural gas provides a cheap fuel for use in homes and factories, and also supplies raw materials needed in modern plastics and *chemical industries*. A steel pipeline from Alberta to Ontario and Quebec will soon bring natural gas 2000 miles to the factories and homes of central Canada. Another pipeline takes gas across the mountains to the coast.



Map showing some of the main transportation routes in Canada. See TCA and CPA maps for southern air routes.

MANUFACTURING

Agriculture has always been the main industry of the prairies, but in both Manitoba and Alberta, manufacturing is gaining in importance. You should not find it difficult to figure out what the most important manufacturing industries are.

Slaughtering and meat-packing industries are found in the cities at the edges of the prairies. Cattle, hogs, and sheep are sent to the factories there, usually alive, to be prepared for shipment to other parts of the country.

Because wheat is easy to ship, much of it is sent out of the prairies unprocessed, that is, without having had anything done to it. However, there are a large number of flour mills on the prairies.

The oil wells of Alberta and Saskatchewan provide the raw materials for oil refineries throughout the prairies. Refining oil means separating it into gasoline, kerosene, fuel oil, and other products. A pipeline carries the oil from the wells in Alberta to Sarnia in southern Ontario. As the oil passes through the prairie cities the pipe is tapped and oil taken out for local refineries. New chemical industries that use oil and gas for raw materials are being built in the prairies.

Butter and cheese factories flourish in the regions where there are dairy herds.

Manitoba has had the greatest expansion in industry because it is the oldest settled region in the west; it has an abundant supply of water power; the trees and minerals from the Shield provide it with raw materials; and all goods going from the prairies to the east must pass through Winnipeg. Winnipeg is thus a convenient place in which to have goods processed.

TRANSPORTATION

Transportation is vital to the prairies because the people there must send their products to distant markets in order to make

a living. The prairies are not densely populated and so do not provide an adequate market for their own goods. The prairies also specialize to such a great extent that they not only produce more wheat and meat and oil than they can use, they also produce more than the whole of Canada can use. The prairie farmers and city people need a great number of articles that are not grown or manufactured on the prairies. They could not get along without the tractors, combines, and other goods that they import; it is important to them to be able to bring goods in, as well as to be able to send goods out. For these reasons few people lived on the prairies before the transcontinental railway was built in 1885. Railways, *elevators*, lake boats, and pipelines are what keep the life blood of the prairies moving.

Animals are usually driven to the nearest railway line, where they are loaded onto special livestock cars to be taken to the meat-packing plants in the cities.

Even in villages of only a few hundred people there is always a grain elevator. Indeed, one may see two or three elevators beside a railway and no village at all — just the cottage of the elevator man. The farmer brings his truckloads of wheat to the nearest elevator. There it is stored until the railway can send empty freight cars to carry it away.

The train carries the wheat to the larger centres, where it is again stored in elevators. The biggest elevators in the world are at Port Arthur and Fort William, for most of the grain that is going east passes through these ports. There the grain is poured into the ships (see the picture, page 85) or stored in the terminal elevators to wait until there is an empty ship in port. The lake freighters carry the wheat to the Great Lakes ports or to Montreal for shipment abroad. Some grain going to Europe is sent to Churchill, Manitoba, and then by ship through Hudson Bay.

Millions of bushels are shipped by train to Vancouver and Prince Rupert, where they are loaded into ships that will carry them to Japan and other Pacific countries or through the Panama Canal to Europe.

One of the biggest problems is how to move all the wheat from the small elevators to the main terminal elevators and from there to the purchaser. In good crop years the railways and the lake boats cannot carry away the grain fast enough, and the elevators become full. This means that sometimes the grain has to be left in the farmers' granaries or piled on the ground until storage space is available for it. Sometimes the wheat crop is so large that it cannot all be sold in one year. The unsold wheat is kept through the winter in the elevators; but if there is another bumper crop the next year there will be a serious shortage of space. Sometimes, of course, there are crop failures, and then the farmers and the people who buy the grain are very glad that there is some wheat still unused.

Oil and natural gas can be carried in special railway cars, but most of the oil and

Carcasses of meat hung in a meat-packing plant.

Courtesy Govt. of Manitoba



gas is now sent by pipeline. A huge pipeline, 1765 miles long, brings prairie petroleum to Sarnia, Ontario. A second pipeline will bring natural gas east, and as a result, eastern Canada will not have to rely as heavily on the United States for its fuel. Two pipelines, one gas and one oil, connect the Alberta petroleum fields to the Pacific coast at Vancouver.

CITIES

The western cities have much in common. All are transportation centres. If you look at the railway map on page 82, you will see that the railway lines all meet at the large cities. Most of the cities are airline centres as well. The cities originally grew because they were well situated as the focal points of trade. Manufacturing followed because it was easier to get the raw materials to these places and to get the finished products out. Most prairie cities have meat-packing plants, flour mills, and oil refineries.

Winnipeg. Winnipeg is the capital of Manitoba and the "gateway to the west." There all the routes to the west meet as they pass between the Manitoba lakes and the United States border. It was thought at one time that the Canadian Pacific Railway might build its railway through Selkirk, a town a little to the north of Winnipeg. If this had happened Selkirk would now be the larger city.

Because all goods moving east from the prairies must pass through it, Winnipeg receives more animals and wheat for processing than does any other prairie city. Because it is situated where two regions meet, Winnipeg is a trading or market centre for goods from both regions.

Regina and Saskatoon. Both these towns grew up as transportation centres, to serve the surrounding farm lands. Regina is the larger of the two. It is the capital of Saskatchewan. The farmers of Saskatchewan send their products to these cities. There they are either reshipped farther east or west or processed in the flour mills and meat-packing plants of the cities. Goods going to the farmers are distributed from Regina and Saskatoon.

Edmonton. Edmonton, the capital of Alberta, is perhaps the best example of a city that is a real air centre. The airport at Edmonton handles more air freight than almost any other airfield in the world. A look at the map of Canada will explain why. Edmonton is the closest city to the new mining areas in the Northwest Territories and the northern part of the Prairie Provinces that can be reached only by air. Supplies for many of these towns are flown from Edmonton; some of the companies have their own transport aircraft. Many prospectors and trappers have their supplies and equipment flown in to them by bush pilots. The small airline companies have done much to open up the new northland.

The only road to Alaska starts at Dawson Creek, in British Columbia, but much of the traffic is funnelled through Edmonton. It is also possible to get to Dawson Creek from Vancouver. The Alaska Highway, as it is now called, was built in record time during World War II by Canadians and Americans working together. It was needed so that supplies could be moved overland to our northern forces and to the army fighting the Japanese in the Aleutian Islands, just off the coast of Alaska. Edmonton is on the Canadian National line to the Pacific.

Edmonton has the usual manufacturing plants. Because the largest oil fields are near Edmonton it is fast becoming the oil headquarters of Canada. The local gas fields are the bases for a large chemical industry.

Calgary. Calgary had its beginning as a *pass* town and it still is one. The main route to Vancouver passes through Calgary and then the Kicking Horse Pass. With the

growth of Alberta, Calgary soon became a railway and marketing centre for a fairly large area. The routes from the prairies come together there before going through the mountains.

Because the first oil to be discovered in Alberta was found near Calgary, oil companies set up offices there.

The Calgary Stampede attracts many visitors each year. It is the Alberta rodeo. The most spectacular event is the exciting chuck wagon races in which chuck wagons and their outriders roar around the track and sometimes tip and spill. Before the Stampede opens, there are parades through the streets.

THE GEOGRAPHY WORKSHOP

I. PEOPLE AND INDUSTRIES

1. Find all the cities on the prairies that have over 30,000 people living in them, and put these places on a map. Compare this map with the one you made of the cities in the Lake Peninsula. Can you explain why there are so few big cities on the prairies?
2. Some of these cities have grown much bigger in the last few years. What has happened to bring more people to parts of the prairies? Where do you find most of the new industries?

II. RAILWAYS AND AIRPLANES

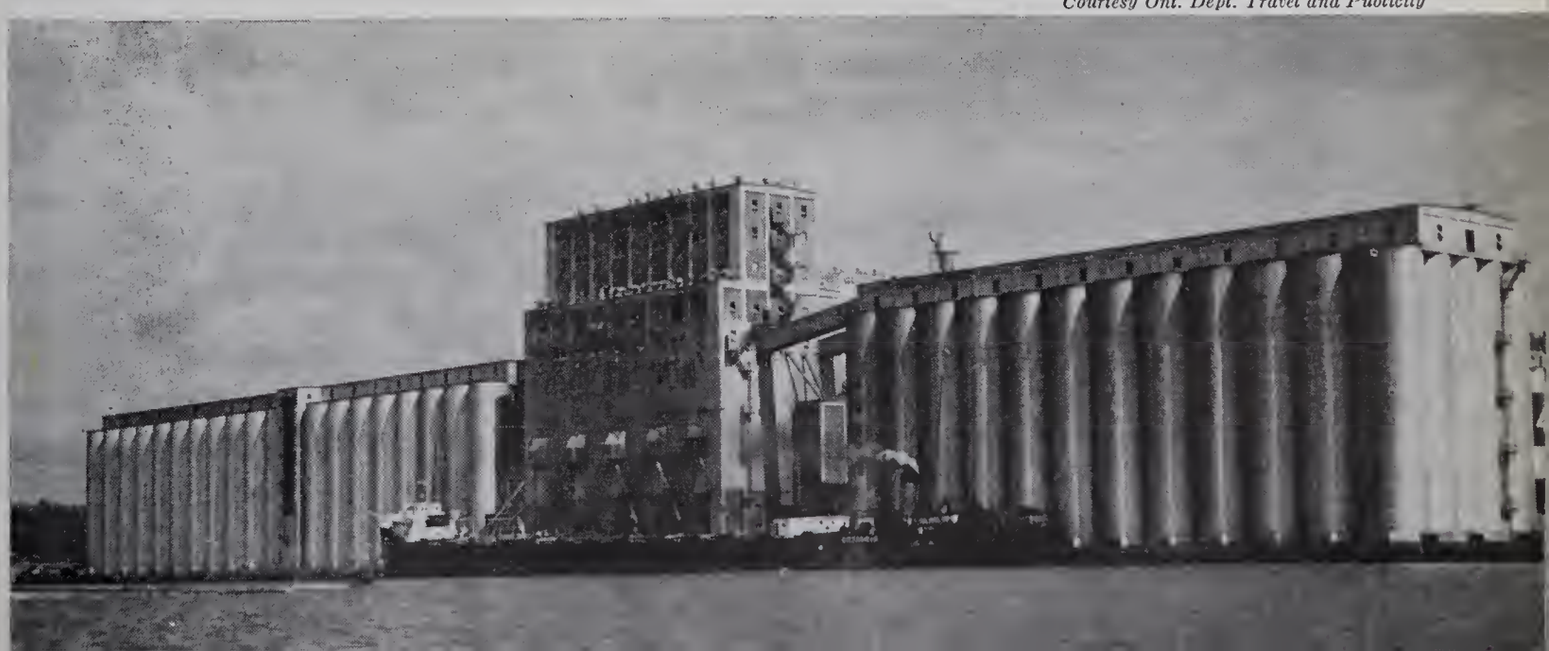
1. The prairies depend more on the railways than does any other part of the country. Why is this so? What other methods of transportation are used to carry prairie products?
2. Many people on the prairies travel by airplane. Why is it more practical to use airplanes there than in some other parts of the country?

III. THINGS TO DO

1. Make a poster to show one way of earning a living in this plains region. Display all the posters when you and your fellow students have finished making them. How many different jobs or occupations does your display illustrate? Are there any occupations that your class left out?
2. Now make a poster to show the things that you use that are made or produced in the plains region.

Grain elevators at the Lakehead. Grain is being poured into the freighter through pipes.

Courtesy Ont. Dept. Travel and Publicity





THE MOUNTAIN REGION

The history of British Columbia began late. It could not well be otherwise. It is so far away from Europe that it took explorers and settlers many centuries to reach it. The fur traders, as usual, were the first to arrive. They built their posts farther and farther west until finally they came to the Rocky Mountains. In 1793, Alexander Mackenzie, a servant of the Hudson's Bay Company, made his famous trip along the Peace, Fraser, and Bella Coola rivers to reach the ocean. He was the first white man to cross the North American continent north of the Spanish colonies, though he was not the first man to see the North Pacific coast.

A little earlier, the coast of British Columbia had been explored by James Cook and later by George Vancouver, who came, not by land, but by ship.

Fur traders and miners came to live in British Columbia, and the population grew gradually. When the Dominion of Canada came into being, British Columbia could not decide for a while whether to join the new country or not. Canada was about 2000 miles away, and there was no road joining the west and the east. Finally, British Columbia entered Confederation on the understanding that a railway must be built across the prairies to the Pacific coast.

WHAT WE CAN LEARN FROM MAPS

MOUNTAINS AND TRANSPORTATION

1. Look at the physical-political map on pages 30-31. In the western part of Canada you can see a region of mountains. What provinces are these mountains in? How much of each province is mountainous? How far north and south do these mountain ranges extend?

2. The mountains give Canada some of the most spectacular scenery in the world, but they also present some problems. One of these is the problem of transportation. The ports of British Columbia are the only exits that Canada has for sending goods to countries that border the Pacific Ocean, but before any goods from the prairies or from anywhere else in Canada can reach the coast they must pass through the mountain barrier.

Find the three main passes through the mountains, which are marked on the map on page 91. If you find the passes on the physical map, you will see that even these passes are quite high in some places. There are some passes farther north, but they are too far away to be of any great use as yet. Put the names of the three passes on your outline map.

3. Look again at the physical-political map. Where would you expect most people to live? If you chose the lowlands around the Fraser River and on Vancouver Island you would be correct. If you look at the population map on page 35, you will see that the population is also fairly dense in the Okanagan Valley and around the city of Trail. The rest of the population is scattered through the more mountainous area.

THE PACIFIC, MOUNTAINS, AND WEATHER

1. The rainfall map may show you something that you did not expect. The rainfall in British Columbia is much heavier than it is anywhere else in Canada, heavier even than it is in the Atlantic Provinces, which are also by the ocean. Notice, too, that there are three strips of heavy rainfall separated by strips of lighter rainfall. If you compare the rainfall and physical maps, you might guess that the mountains have something to do with causing the rain, because the areas of heavy rainfall correspond with the locations of the highest mountain ranges.

Actually it is a combination of ocean, wind, and mountains that causes the rain. The air above the ocean is, of course, very

Cattle in a mountain pasture.

Courtesy Alberta Govt.



moist, because the sun evaporates the water from the surface of the ocean and leaves it as water vapor in the air.

In this latitude the *prevailing winds* blow from the west. This means that British Columbia receives a constant supply of moist air. If the moisture in the winds from the Pacific can be turned into rain British Columbia will be a very rainy place.

It is the mountains that cause the water vapor to turn to drops of water. Warm air can hold more moisture than cold air can. When the air reaches the shores of British Columbia it is usually fairly warm, but when it comes to the mountains it has to rise in order to get over them, and as the air rises it becomes colder. When it is cold the air cannot hold as much moisture as it could when it was warm, and the moisture that it can no longer hold collects into drops and falls as rain. Over very high mountains the moisture freezes and falls as snow.

As the air goes down the east side of the mountains it becomes warmer and so is able to hold more moisture. This is why there is less rain on the eastern slopes of the mountains. Now you can see why the heaviest rainfall comes where the mountains are the highest.

2. Look at the growing season map. What does it show you that seems rather unusual?

All along the coast the growing season is anywhere from three to six months long, but only a little way inland the growing season is much shorter. The winds and the ocean are again responsible. In the winter, the water of the Pacific Ocean is warmer than the land. The winds from the Pacific bring the warm air to the British Columbia coast and thus make the winter warmer. In the interior of British Columbia the weather is much colder.

The winds have the opposite effect in the summer. The coastal strip has a nice cool summer instead of the heat that it might have if it were not for the cool winds from the Pacific.

LIVING AMONG THE MOUNTAINS

WHAT THE LAND IS LIKE

At the eastern edge of the mountain region are the Rocky Mountains. Because they are "younger," they have not been worn down as the Appalachian Mountains have. Running along the highest ridge in the Rockies is the *Great Divide*. East of the Great Divide all rivers flow to the Arctic Ocean or to Hudson Bay. West of the Great Divide all rivers flow into the Pacific Ocean. The crooked part of the British Columbia-Alberta border follows the Great Divide. From a Canadian Pacific Railway train window at the exact point of the Divide, you can see a stream come down a mountain and divide into two parts; one half flows west to the Pacific, the other half flows east to Hudson Bay.

At the western edge of the mountain region is the Coast Range. It reaches right to the Pacific Ocean for, except at the mouth of the Fraser Valley and across the *channel* on Vancouver Island, there is no coastal plain in western Canada.

Even the islands along the coast are actually the tops of mountains that rise above the surface of the water. Vancouver Island and the Queen Charlotte Islands are the most important.

Between these two great mountain ranges is a *plateau* region containing many smaller mountains and broken by several other mountain ranges. A plateau is a region of relatively flat land that is high up. The plateau of British Columbia is less flat than most. It is cut up by many mountains and valleys.

FOREST INDUSTRIES

The forests of British Columbia are her greatest natural resource. The vegetation map shows that the natural vegetation of the mountain region is cone-bearing trees, but unfortunately it can give you no idea of the magnificence of the west coast forests. In them grow the Douglas firs that tower to great heights. It is a greatly-sought-after wood, for it is one of the strongest woods in proportion to its weight; this makes it ideal for construction work. It has a beautiful grain as well. Unfortunately, the large-sized Douglas fir began to disappear. They take a long time to grow, and more trees were being cut in a year than could be replaced. The government has now taken steps to see that the number of Douglas firs increases instead of decreases.

It is only along the coast that the spectacular trees grow, for it is there that the climate is just right — damp and mild. Lumbering on the west coast is expensive because the machinery for cutting and transporting such large trees costs a great deal; a single tree makes a full load for the great logging trucks that are used to haul the wood down the mountain roads to the sawmills on the coast. Rafts of logs are towed by tugs through the sea to the lumbering centres.

Forest rangers have posts all through the forested areas to watch for fires so that they can be spotted and put out as soon as possible.

Most of the trees cut in the Shield are used to make paper, but it would be a pity to use such trees as the Douglas firs and red cedars for this purpose. They are used for construction, for making beams, doors, sashes, plywood, and so on. These are known as sawmill products. British Columbia's output of sawmill products equals that of all the rest of Canada combined.

FISHING

People in eastern Canada seem to associate fishing with the Atlantic Provinces, but actually about half of Canada's supply of fish comes from the west coast. The first commercial fishing, that is fishing to catch fish to sell, was not done in the west until

A scene in the Rocky Mountains.

Courtesy Canadian Wildlife Service



1870. Remember that the west coast was not settled by white men until quite recently. The Indians have always fished there, of course.

Halibut is caught in the shallow protected waters around the coastal islands. Herring are scooped out in large nets in the Vancouver Island area. But the fish that is usually associated with British Columbia is the salmon.

Salmon are hatched in rivers. The little fish then swim to the ocean, where they stay until they have grown to be big fish. Then they swim back up the rivers to lay their eggs. Every spring the salmon swarm into the rivers of the west coast and are caught by the fishermen who lie in wait for them with gill nets and purse-seines off the mouths of the rivers. Some of the salmon fishermen go out on the ocean in their fishing boats to catch the salmon as they swim toward the river mouths.

A seine is a very long net that looks much like a gill net. It has floats along the upper edge and weights along the bottom. When a school of fish is located, the ship makes a wide sweep around them, while the crew let out the seine behind her. When the fish are surrounded by the net, a cord that runs along the bottom of the net is pulled tight, thus closing or "pursing up" the bottom of the seine. The trapped fish are scooped out of the purse-seine by a large dip net called a "brailer." Many fishing boats are now equipped with radar to locate schools of salmon or herring or other fish.

Most of the fishermen take their whole catch to a canning factory, where it is quickly cleaned and canned. Many take the salmon to the big canneries in Vancouver and Prince Rupert. There are other canneries in the small towns along the coast to which the fishermen can take their catches of fish.

MINING

You know by now that until the middle of the last century very few people lived in British Columbia. Those who did, lived on Vancouver Island. Gold helped to make people settle in other places. The gold discovered in British Columbia, in the famous Cariboo country, attracted thousands of people to this region. Some got rich, many did not; but many who came, whatever their fortune, stayed.

The smelters at Trail, British Columbia

British Columbia Government Photo



There are many other deposits of metals scattered through the mountains, but it is only in the regions where there is good transportation that much mining is done. Look along the Canadian-United States border until you come to the town of Trail. This is the centre of an important mining region. Nearby, at Kimberley, are silver-lead-zinc deposits. At Trail are the large smelters that refine these metals. British Columbia uses very little of the metal she mines; most of it is shipped out to other manufacturing regions.

FARMING

As you can see, farming on a large scale, such as is carried on in the prairies, would be impossible in the mountains. However, in many of the valleys the soil is fertile, and small-scale farming is possible. Most of the farming is done in the large valleys such as the Fraser and Okanagan. It would cost too much to bring farm products from isolated valleys farther in the mountains.

Small fruits, such as raspberries, and vegetables are grown in the Fraser Valley. Fruit trees grow in the Okanagan and Kootenay valleys. The apples of the Okanagan Valley are famous.

The lowland contains many more city people than farmers. Most of the farmers raise food for the city people. Grain and meat can easily be shipped from far away, but near cities you almost always find farmers with dairy products, eggs, fruit, and vegetables to sell. Farmers in this lowland grow more fruit and vegetables than the city people need. They send the extra *produce* to canning factories and freezing plants.

Some of the interior farmers keep beef cattle, and others raise sheep. The sheep are usually pastured on the more hilly and rocky land because they can climb better than cattle.



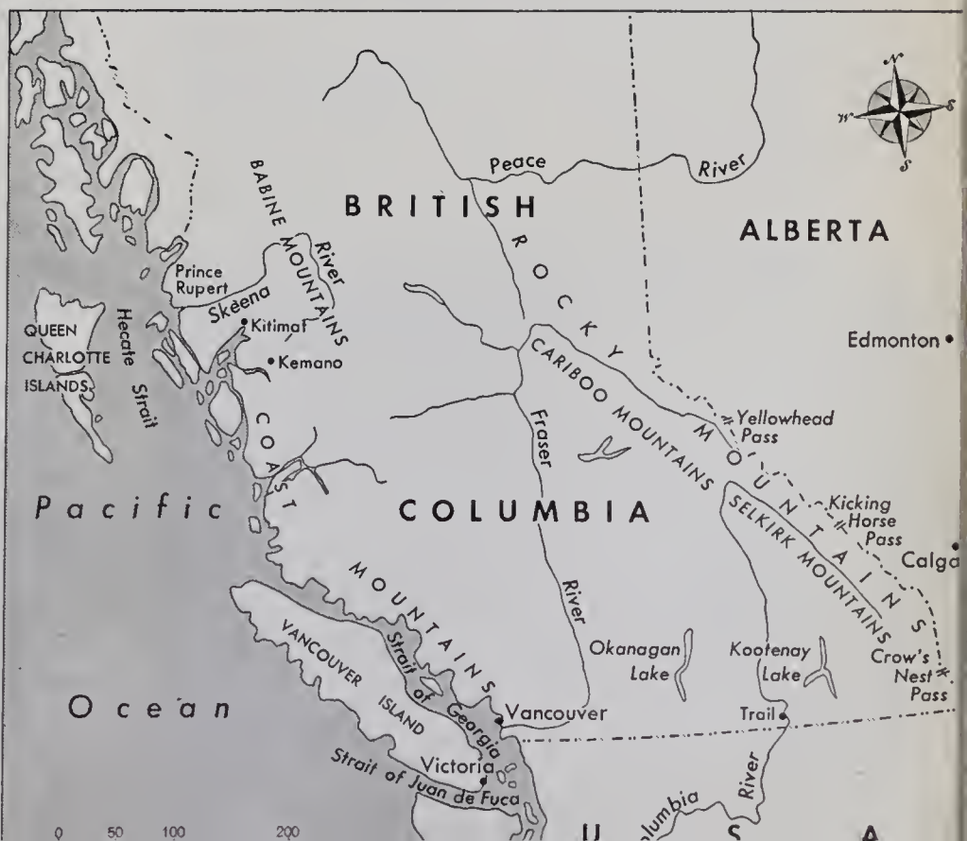
Courtesy Dept. of Fisheries of Canada

A purse seiner hauling in a catch of pink salmon.

ELECTRICITY AND ALUMINUM

Because there is so much rain and snow in the mountains there are many powerful rivers in the mountain region. In Canada,

Map of British Columbia





Courtesy Aluminum Company of Canada

Inside this mountain is a ten-mile-long tunnel through which water runs, turning the turbines that generate the electricity at Kemano for the aluminum refineries at Kitimat.

we no longer use much water power to run factories or mills; instead we use the water power to generate electricity. In British Columbia, there is plenty of electricity to run the machines in the sawmills, mines, canneries, and other factories. In fact, the swift mountain streams could furnish much more power than they do.

British Columbia has not developed manufacturing to any great extent. Most of its factories are engaged in processing the raw materials produced in the province. These factories can salmon, freeze fish, saw lumber, make paper. British Columbia also has a shipbuilding industry.

Probably one of the world's greatest engineering feats is the Kitimat project in British Columbia. There a river has been reversed and now flows west through a ten-mile tunnel through a mountain to the Pacific coast. At Kemano, this man-made river is used to make electricity in a huge one-and-one-half million *horsepower* hydro plant, built inside a mountain. The electricity from this generating station is being used for refining aluminum at the new city of Kitimat.

The availability of electric power is the reason that this great aluminum refinery has been built in British Columbia. *Bauxite*, from which aluminum is made, is brought from the British West Indies or from the South American country of British Guiana. Because the ore has to come a long distance by ship, the refinery has been built on a harbor.

THE TOURIST TRADE

The magnificent scenery of the Rockies naturally brings many tourists to this region. Besides mountains, they may see bears, moose, beavers, deer, marmots, mountain goats, and mountain sheep. Railway trains with observation cars, glass-topped buses, bicycle tours, and even pack horse camping trips help the tourist to see the mountains. Every type of accommodation, from luxury hotels to trailer camps, is provided.

There are no finer cruises than those that go along the Pacific coast of British Columbia to Alaska. The tourist attractions of the mountain region are for some people even greater than those of the Rock Country in central Canada. If the Rock Country has more visitors, the reason is that it is closer to the main population centres of the continent.

CITIES

Vancouver. The big seaport of Vancouver is near the mouth of the Fraser River. You know that this city has a good harbor, but if you look at the coast of British Columbia, you will see many other good harbors. The city of Vancouver was built where it is, not just because it has a good natural harbor but, more important than this, because the city is the natural terminus of the best passes through the mountains. Vancouver is growing because the passes direct all Canadian trade going to and coming from the west coast through Vancouver. As a result, Vancouver is the main west coast port for all of Canada.

Products of the mountain regions are not all shipped out by rail. Ship after ship loaded with lumber leaves the western

ports. Not all of the ships are going to other continents. Many of the lumber ships are going to ports farther south on the Pacific coast. Many are going to ports on the Atlantic coast, by way of the Panama Canal.

Lumber is not the only cargo carried away from the west. Canned and frozen fish, wheat, aluminum and other metals, and big rolls of paper are shipped out.

Victoria. On Vancouver Island, across the Strait of Georgia from Vancouver, is the city of Victoria, the capital of British Columbia. Vancouver Island is not small. It is larger than the province of Prince Edward Island and not quite as large as Nova Scotia. Because most of the centres of population in British Columbia are along the coast, an island capital can keep in touch by boat and by airplane with most of the province's population.

Prince Rupert. Another growing port on the west coast is Prince Rupert. It is opposite the Yellowhead Pass, which is the route through the mountains from Edmonton and the northern parts of the prairies. It does much the same type of shipping business as Vancouver, but on a smaller scale.

THE GEOGRAPHY WORKSHOP

I. OUT OF THE WATERS

1. What are the most important types of fish caught on the Pacific coast?
2. What methods of fishing are used on the west coast? To answer this question fully you may have to look in some other books or magazines.
3. The west coast has no lobsters. Find the name of the west coast shell fish that has a meat similar to lobster.

II. PEOPLE IN THE MOUNTAINS EARNING A LIVING

1. Why was the mountain region settled so late in the history of our country? What did the first settlers do to earn a living?
2. Where can people farm in the mountains? Can the farmers there grow the same crops as the prairie farmers? Can they use the same machines? What are the reasons for the differences?
3. Why did the Aluminum Company of Canada decide to build their new aluminum refinery at Kitimat?
4. Find some pictures of the western mountains to put on your bulletin board. They will make an attractive display. Tourists come from thousands of miles away to look at scenes like these. What other things bring tourists to the mountains? Why is the tourist trade not as big an industry in the mountains as it is in the Rock Country?
5. The timber trade is important in the Rock Country and in the Atlantic Provinces, and in the mountains, but the methods used by the lumbermen in the mountains are different from those used by the other lumbermen of Canada. Can you find out what the differences are? Why are the methods different?

Logging operation in British Columbia.

Courtesy British Columbia Govt. Travel Bureau





THE NORTH

Everyone has a vague idea of where the North is, but it is very hard to draw a line and say that north of this line is the North. Take an outline map of Canada and put on it the southern boundary of the area with 10 inches of rainfall, of the area with a two-month growing season, and of the tundra region. These lines outline roughly the southern edge of the North. For convenience we are using the parallel of 60° north latitude as the boundary of the North. The North, as we have defined it, is not a unified region. It contains the northern portions of three regions; the northern portion of the Canadian Shield, of the Central Plains, and of the mountain region.

Why, then, do we think of the North as one region? Partly because the North is less known, less developed, and less populated than the other parts of Canada are, but mainly, perhaps because we have always thought vaguely of "the North" as being one region.

Twenty years from now the North may be so important to Canada that geographers writing textbooks on Canada may write about the North, not as one place, but as four or five regions.

What unknown wealth does the North hold in its vast treasure boxes of hundreds of thousands of square miles of rock? Already the Shield has yielded untold value

in the Rock Country. What more may it yield north of the provincial boundaries? Mountains of iron have reeently been diseovered in the Shield in Labrador and Quebee. How many more lie in Baffin Land or Ellesmere Island?

In the North is Canada's great frontier. Growth in Canada ean only turn north; already we see signs of the truth in the title of the book by the great explorer, Vilhjalmur Stefansson, *The Northward Course of Empire.*

WHAT WE CAN LEARN FROM MAPS

FINDING OUT ABOUT THE NORTH

1. Look at the vegetation map and find the tree line. North of this line, trees do not grow. For most of the year this land is covered with snow and ice and the ground is frozen, but in the short summer, plants do grow. The kinds of plants that grow beyond the tree line are called tundra vegetation.

2. On the map of North Ameriea you see a number of large islands north of the continent. The largest island is Greenland, whieh belongs to Denmark. This is shown on the map by the letters DEN. under the name Greenland. All the other islands belong to Canada. Put Baffin Island, Victoria Island, and Ellesmere Island on your map. Look at these islands on your population maps, pages 14-15 and 35.

3. Look at the vegetation map on page 37. Near the tree line the forest is made up of rather small, stunted trees. The vegetation map shows you that the forest goes farther north in the Mackenzie Valley than in any other region. The Maekenzie Valley is lowland, and lowlands are usually wàrmer than highlands and have better soils.

4. Find the Maekenzie Valley on your map. If there were no airplanes, how would you reach Aklavik, at the northern end of the river, from Edmonton? Follow the lakes and rivers, after you leave the highway.

5. Find the Aretie Cirele on the map and trace it with your finger. It is 66½° north latitude. Probably you know what the Aretie Cirele marks. At the Aretie Cirele there is one 24-hour day in summer when the sun does not set; there is one 24-hour day in winter when the sun does not rise. The farther north you go, the longer the periods of eontinuous daylight and darkness beeome. At the North Pole, the sun does not set for six months, and it does not rise for six months.

This huge head of cabbage was grown north of 60° north latitude.

Courtesy Alaska Airlines, Inc.



AN EMPTY LAND

THE TUNDRA

If you look at the vegetation map you will see the region of tundra. This region is frozen solid for most of the year. Sometimes the ground is swept bare by the winds, sometimes it is covered with snow. This is the North we are used to imagining. In the summer the land is very different, and most people are quite surprised to learn that in the summer the barren northern wastes are carpeted with brightly colored flowers and moss and lichen. The summer is short, but the hours of darkness are few and plants grow quickly in the continuous sunshine. However, even all that sunshine is not enough to melt the ground more than a few feet from the surface. Water cannot soak into the frozen ground, and in many places summer creates large stretches of muskeg, in which are hatched great swarms of mosquitoes.

You might not expect to find many animals in a land such as this, but caribou, hares, foxes, lemmings, musk-oxen, and bears live in the North.

EARNING A LIVING IN THE NORTH

The first white men to come to the North came to get furs. They built trading posts beside the rivers and lakes and along the shores of Hudson Bay. There are still trading posts in the North, and many Indians make a living by trapping and selling furs. They trap in the winter, and in the spring they bring the furs to the trading posts. Perhaps you know someone whose fur coat is made of fur that came from one of the northern fur posts.

Mining is what has brought people to the North in more recent days. Gold is mined at Yellowknife on Great Slave Lake. The discovery of deposits of *pitchblende* at Port Radium made Canada the world's greatest producer of *radium*. Uranium also comes from pitchblende, but it was not until the recent discoveries about atomic power that it was considered of value. Pitchblende is also mined at Uranium City. Pitchblende is so valuable that it pays to fly it out.

There are weather stations and radar stations in the North.

A weather station in the Far North.

National Film Board of Canada



You have probably heard of the famous Klondike Gold Rush. In 1897, gold was discovered in the Klondike River in the Yukon, and thousands of prospectors made the difficult and sometimes dangerous trip over the Chilkoot Pass into the Yukon.

Dawson City, in the midst of the mining region, quickly became a city of over 30,000 people. Today, fewer than 1000 people live there. Where in earlier days miners laboriously panned the *free gold* by hand, large hydraulic dredges now operate. Lead is also mined in the Yukon in fairly large quantities, though British Columbia, of course, mines a great deal more. The Yukon lies in the same mountain system as British Columbia.

There are only two areas in the North in which it is possible to farm: the southern Yukon valleys and the Mackenzie Valley. The soil and rainfall are good enough for farming in a few places. The growing season is short, but in the long hours of sunlight vegetables and berries grow very quickly. The long hours of sunlight also make them grow very large. Near most settlements along the Mackenzie River you will see vegetable gardens.



Captain Bartlett from Gendreau

Eskimo men hunting seals along a rocky coast. The little boats are called kayaks.

TRANSPORTATION

Rivers and lakes are the natural transportation routes in northern Canada. Hunters and traders use them. Canoes are still used, but nowadays most people have outboard motors.

You have already traced the water route from the Athabasca River to the mouth of the Mackenzie River. Steamboats go up and down this route. They carry supplies to the mines and carry away ore. They carry bales of furs, too.

Have you ever heard of a snowmobile? There is a picture of a snowmobile on page 98. These tracked vehicles are much more powerful and much more comfortable than a dog sled for overland travel. They are being used by the Canadian Army, the Royal Canadian Mounted Police, and by mining companies and trappers.

The tractor train is another new form of transportation. It is a train of big sleds pulled by a powerful tractor that has wide treads. In winter, tractor trains haul heavy freight to many places. They can go anywhere on the ice of frozen rivers and lakes, but they cannot be used in the summer because of the many patches of muskeg.

The most important invention as far as the North is concerned was that of the airplane. Distances are so great in the North and the land is so rugged that the airplane is by far the best method of transportation. Airplanes have made it possible to go in hours to places that once took weeks or months to reach. The airplane has made possible many new settlements.

Commercial airlines have flights to the North, but there are many thousands of miles without regular airlines. The police, fur companies, and mining companies all have planes for flying to such places. Bush pilots fly all over the North. They carry mail, and they carry packages. They carry prospectors, miners, and missionaries. They bring in doctors and bring patients out to hospitals. Bush pilots use lakes and rivers as

landing fields. In winter they land on the ice with skis.

PEOPLE IN THE NORTH

You probably know quite a bit about the people whose home has always been the North. They are the Eskimos and the Indians. The Eskimos live along the northern shores of the continent. Seals and fish are their chief sources of food and so, of course, they must stay near the water. They live on the tundra land from western Alaska to eastern Greenland.

There are not many Eskimos. You could travel for miles and miles in the North without seeing one. They live in little villages, far apart. All the Eskimos in Canada could watch a hockey game in Toronto's Maple Leaf Gardens at the same time without overcrowding the building.

Indians live in the northern forests. They used to fish and hunt to keep themselves alive. Today many of them are trappers.

THE GEOGRAPHY WORKSHOP

I. PEOPLE MOVING TO THE NORTH

1. In the last few years more people have been going to the North. Why do they go there? How do they serve the whole of Canada? Do they live there permanently? Where does their food come from?

2. What city not in the North region is the main supply base for the North? Why is this city best suited to serve as a main supply base?

II. TRAVELLING IN THE WILDERNESS

Draw pictures in your notebook of the various ways in which people in the North travel. Underneath each picture write an explanation of what advantages there are to travelling in this way. You should have at least five pictures, and you may be able to think of more than five ways to travel in the North.

A snowmobile

National Film Board of Canada



III. IMPORTANCE TO CANADIANS

1. Why have Canadians become much more interested in the North in recent years?

2. Study the globe. Find where you live. If you wanted to fly to western Europe, what would be the shortest route?

To find out, stretch an elastic or a piece of string from your home town to where you want to go. This will mark the shortest route.

3. With a piece of string and a globe, find the shortest route from:

a. Winnipeg to Paris
b. Montreal to Moscow
c. Vancouver to Berlin

What region do all of these routes go through? We must not forget that the earth is a ball, and directions are not always the way they seem on a flat map. As air travel increases and the need for air defence grows, the North will become more and more important.



CANADA — ONE COUNTRY

In this book we have studied Canada by dividing it up into its geographic regions. We must be careful to realize, however, that Canada is not just a number of regions with little in common that have joined together under one government. Each region is different, but all regions depend on the others and work together as one unit.

Let us now take a look at Canada as a whole.

WHAT WE HAVE LEARNED

1. We have learned that Canada is made up of many regions, each with its own advantages and disadvantages. Make a list of the advantages and disadvantages of each region.

2. We have learned that the different parts of the country work together. The prairie farmers sell their wheat and meat to the rest of the country. The Shield provides the trees, minerals, and power that are the basis of the industries of the St. Lawrence Valley and the Lake Peninsula. In return for raw materials and food, the St. Lawrence Valley and the Lake Peninsula provide the machinery and manufactured goods that the rest of the country needs.

3. We have learned why more people live in some parts of the country than in others.



Cominco Photograph

One of Canada's resources being used intelligently.

4. We have learned in what ways the people of Canada earn their living; why they earn their living in different ways in different parts of the country.

5. We have listed some of the more important things that we have learned about Canada, but there are many more. Can you make a list of them?

CANADA HAS ROOM TO GROW

From what you have read about Canada you should now know that Canada has room to grow. It is a large country with a small population. Most of our people live in southern Canada, but the population is spreading to the north. In several regions farmers as well as miners and lumbermen are moving farther north.

A natural resource that has been wasted through the carelessness of a camper.

Courtesy Ont. Dept. Lands and Forests



We have many natural resources that have not as yet been used, minerals still in the earth, water power unharnessed, land unirrigated, territory unsurveyed. This speaks well for the future of our country.

But we must not be too optimistic. There are millions of acres of unsettled land, but what many people do not realize is that much of this land cannot be settled because there is no way for people to earn a living there.

One possible threat to Canadian prosperity is the world situation. If the rest of the world grows poor, Canada will grow poor also, for if no one can afford to buy our newsprint, wheat, minerals, and manufactured goods, or if other countries can produce and sell these things more cheaply, it will not help us much to have them.

Canada has many resources, but they are not unlimited. Once minerals are mined they cannot be replaced. If we mine in a wasteful manner, not bothering about the lower grade ore, we shall run out of minerals earlier than if we are sensible in our mining methods. Forest fires and wasteful cutting methods could destroy our best forests. Factories that pour their wastes into streams have in many cases killed the fish where there once was a fishing industry. We have much, but we must not waste it.

CANADIANS WORK TOGETHER

It is important to remember that wherever we live, and in whatever way we earn our living, we are affected by the rest of the people in our country, and that we in our turn are affecting them and adding something to the way Canadians live.

Take, for example, a boy who might be in the next seat to yours in school. He is wearing leather shoes. The hide came from a steer raised in Alberta. The leather was

tanned in Ontario and made into shoes in a factory in Quebec. The boy lives in a house built of wood, cement, plaster, and bricks. The cement for the foundation came from New Brunswick, the bricks for the walls from southern Ontario, the glass for the windows from Saskatchewan, the wood used in the framework from northern Manitoba, the fir wood trim and the doors from British Columbia, the *gypsum* for the plaster from Nova Scotia, the nails and wiring from Hamilton, the shingles from Quebec; and the fuel oil for heating the house came from Alberta and was refined at Sarnia, Ontario. You could mention many other ways in which this boy is a part of the whole of Canada. Try to imagine the many difficulties that would arise if one part of Canada were completely cut off from the rest.

Because Canadian regions specialize, each one doing what it can do best, great transportation systems have been built up to carry the goods from region to region. This is why Canada has more miles of railway per person than any other country in the world. Many Canadians earn their living by moving things from place to place. Hundreds of factories and businesses depend on raw materials from many parts of the country. To carry on the business of such a country as Canada, Canadians have learned to travel and keep in touch with one another over half a continent.

The railways made it possible for Canada to become one country.

Courtesy Canadian National Railways




UNITED STATES
Scale of Miles
0 100 200 300
National Capitals
State Capitals
Other Cities
Shading from green through yellow, brown, and red indicates increase in altitude. Figures show approximate altitude in feet for corresponding color.
10,000 ft.
5,000 ft.
2,000 ft.
1,000 ft.
500 ft.
Pacific Ocean
Vancouver
Calgary
Regina
Seattle
Spokane
Olympia
WASHINGTON
Portland
Columbia
Salem
OREGON
Cascade Range
Idaho
Boise
Snake River
Butte
Helena
MONTANA
Missouri River
Yellowstone River
NORTH DAKOTA
Bismarck
SOUTH DAKOTA
Pierre
Missouri
WYOMING
Cheyenne
NEBRASKA
Platte River
Sacramento
San Francisco
Carson City
NEVADA
Sierra Nevada
Salt Lake City
UTAH
Denver
COLORADO
Pueblo
KANSAS
Arkansas
Mount Whitney
Los Angeles
San Diego
Colorado River
Phoenix
ARIZONA
Santa Fe
Albuquerque
NEW MEXICO
Oklahoma City
Amarillo
OKLA
Tucson
El Paso
Fort Worth
TEXAS
Austin
San Antonio
Rio Grande
Chihuahua
MEXICO
Monterrey
130°
125°
120°
115°
110°
105°
100°
45°
40°
35°
30°
25°


95°
90°
85°
80°
75°
70°
65°
CANADA
Winnipeg
Red River
Lake Superior
Duluth
MINNESOTA
St. Paul
Minneapolis
Mississippi River
WISCONSIN
Madison
Milwaukee
Lake Michigan
MICHIGAN
Lansing
Detroit
Lake Huron
Toronto
Lake Ontario
Buffalo
Lake Erie
Cleveland
NEW YORK
Albany
Montreal
Ottawa
Quebec
St. Lawrence River
VT.
Montpelier
N. H.
Concord
MAINE
Augusta
Portland
MASS.
Boston
Providence
R.I.
CONN.
Hartford
New York
N.J.
Trenton
Philadelphia
PENNSYLVANIA
Pittsburgh
Harrisburg
Dover
Baltimore
Annapolis
MD.
DEL.
Washington
IOWA
Chicago
Des Moines
Omaha
Lincoln
OHIO
Columbus
Cincinnati
INDIANA
Indianapolis
ILLINOIS
Springfield
WEST VIRGINIA
Charleston
Kansas City
St. Louis
Topeka
Jefferson City
Frankfort
Louisville
Ohio River
KENTUCKY
VIRGINIA
Richmond
Norfolk
Wichita
MISSOURI
OZARK PLATEAU
NORTH CAROLINA
Raleigh
Nashville
TENNESSEE
Charlotte
Tulsa
Memphis
ARKANSAS
Little Rock
SOUTH CAROLINA
Columbia
Atlanta
Birmingham
ALABAMA
GEORGIA
Savannah
Dallas
Shreveport
Jackson
Montgomery
Mississippi River
MISSISSIPPI
Jacksonville
Mobile
Tallahassee
FLORIDA
LOUISIANA
Baton Rouge
New Orleans
Houston
Galveston
Tampa
Miami
Gulf of Mexico
Straits of Florida
Havana
Tropic of Cancer
Atlantic Ocean
North Latitude
45°
40°
35°
30°
25°
95°
West Longitude
90°
85°
80°
75°



THE UNITED STATES—THE EAST

For over a hundred years after the New World was discovered, the eastern *seaboard* of what became the United States remained empty. To the south, the Spanish explored, conquered, and settled the land, and became wealthy. They took from the New World gold, silver, and tropical products. To the north, fishermen and, later, fur traders found other kinds of wealth to take back to Europe. At the beginning of the seventeenth century, the French founded a settlement on the St. Lawrence River near the fur lands.

Between the Spanish colonies to the south and the French colonies to the north lay a long stretch of the Atlantic coast. It reached from about 30° to about 45° north latitude. There was no gold or silver there, the fishing and furs were not as good as they were farther north, but it was the only part of the Americas not claimed by some European country, and there the English settled.

It was more than a hundred years before the whole Atlantic coast was settled. In the meantime, however, some of the colonists moved farther inland. By the year 1775, most of the land between the coast and the Appalachian Mountains had been settled. In that year, the colonists decided that they did not wish to belong to England any longer, so they broke away from the British Empire to become the United States of America.

WHAT WE CAN LEARN FROM MAPS

1. Find on the physical-political map, the area that is black on the map on the opposite page. Print the names of all the states in this area on your outline map of the region.

2. From your map, answer the following questions: Which of the states on your map are next to the boundary of Canada? Which states lie along the Atlantic coast? Which states do not touch the Atlantic coast or the Great Lakes?

THE LAND

1. Turn to the map on pages 102-103 and describe, as well as you can from this map, what the land is like. What does the map tell you about the height of the land in the valleys of the larger rivers?

2. In the early days, the pioneers found it very difficult to go through the mountains to the land beyond. You learned the name of the mountain range when you studied the Atlantic Provinces. Put the mountains on your outline map. One large valley pierces the northern part of the mountain barrier. Early settlers used this valley as an entrance to the west; it is still one of the main transportation routes connecting the east and west. Find it and put it on your map.

3. There are some important rivers in this region which should be put on your map. They are the Connecticut, Hudson, Mohawk, Delaware, and Potomac rivers. The Ohio River forms part of the western boundary of this region, so it should be on the map. You already know Lake Ontario, Lake Erie, and the St. Lawrence River. Put in Chesapeake Bay and Long Island.

CLIMATE AND VEGETATION

1. Turn to the map on pages 8-9 and find out how much rainfall this region has. Remember that 20 inches of rain in a year is enough for many crops, and that very few crops grown in North America need more than 40 inches. Do any parts of the eastern states have less than 20 inches of rainfall? Do any parts of the eastern states have more than 40 inches?

2. How long is the growing season in the northern part of this region? How long is it in the southern part? Notice that the area that has a growing season of three to four months extends southward into New Hampshire and Vermont. There is also a spot in New York with a short growing season. Can you explain why a short growing season is found so far south in these places? The map on pages 102-103 may help you to answer this question.

3. The map on pages 12-13 shows that most of the land in the eastern states is in the broadleaf-forest region. In the northernmost part you will find areas with cone-bearing trees. These are scattered parts of the great northern cone-bearing forest, even though they are separated from the solid mass of this forest. By looking at the physical, rainfall, and growing-season maps, can you find why northern cone-bearing trees are found so far south in the eastern states?

The Capitol Building in Washington. This is where Congress holds its sessions. Congress is like our parliament.

Ewing Galloway



THE PEOPLE

1. Turn to the maps on pages 14-15 and 112. They show that this section is the most densely populated part of the United States. In which states do you find the areas of very dense population? Find two areas of sparser population. In what states do they lie?

2. Compare the population map with the physical map and find out what connection, if any, there is between the height of the land and the density of the population. Can you think of anything else that might affect the density of the population? If you think of why Montreal, Toronto, Hamilton, and Vancouver are important cities, you may find the question easier.

A REGION OF LARGE CITIES

WHY THERE ARE MANY CITY PEOPLE ALONG THE COAST

In your map study you found that the eastern part of the United States is one of the most densely populated parts of that country, and that along much of the coast the population is very dense indeed. Near the centre of this dense population is the city of New York, one of the largest cities in the world. Surrounding it are many other cities, some of them so close together that a stranger cannot tell when he leaves one city and enters another. We shall find out why so many people live in this area.

Most of the early colonists settled along the coast where there were good harbors. They wanted to be near the sea because they depended on the ships from England that brought them food, clothing, tools, and articles to trade with the Indians for furs.

New York City and the Hudson-Mohawk Gap. New York City became the largest and most important of these coastal cities because it stands at the entrance to the Hudson-Mohawk Gap.

When settlers began to move inland, settlement spread mainly up the Hudson Valley and then along the Mohawk Valley. The farmers in the fertile Mohawk Valley had crops to sell, and they wanted to buy many things from Europe and from the cities on the coast. They used the Mohawk

New York City. Notice how tall the buildings are. This part of New York cannot grow outward, so it grows upward.

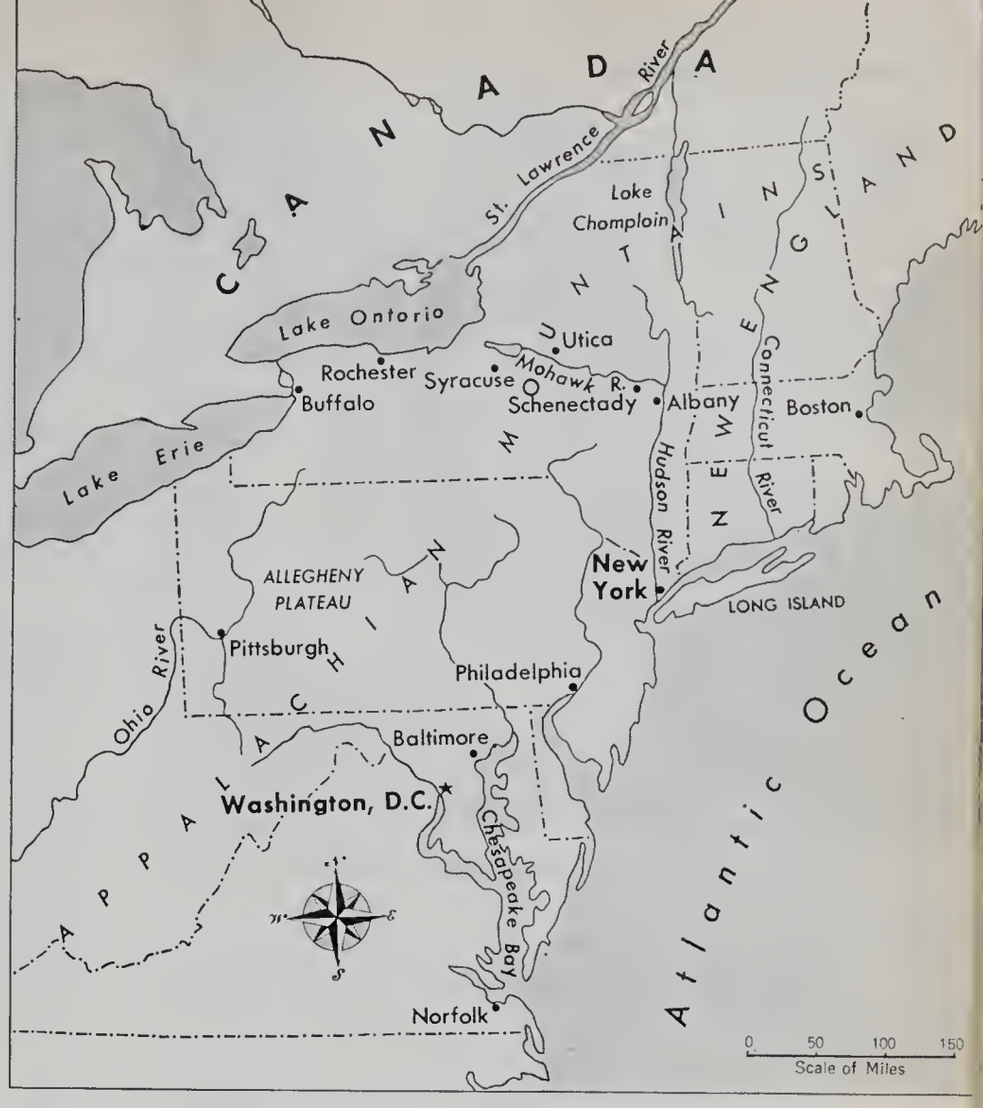
Ewing Galloway



and Hudson rivers as highways, and naturally most of their goods passed through New York.

When men began to settle beyond the Appalachians, they had to find the best way to get to their new homes, and the best way to bring in the goods that they needed and to send out the goods that they had to sell. If you look at the physical-political map on pages 102-103, you will see that the easiest way through the mountains, especially before the days of railways and paved highways, was by way of the Hudson-Mohawk Gap.

You know that it is easier and cheaper to send goods by water. The Mohawk River is not *navigable* all the way up the valley. As soon as there were enough people using this route to pay for such a venture, the Erie Canal was built along the Mohawk River, from Albany to Buffalo. Wide, flat-bottomed boats called *barges*, which could carry big loads, were used on it. Later, one of the first railway lines in the United States was built along the Mohawk and Hudson rivers.



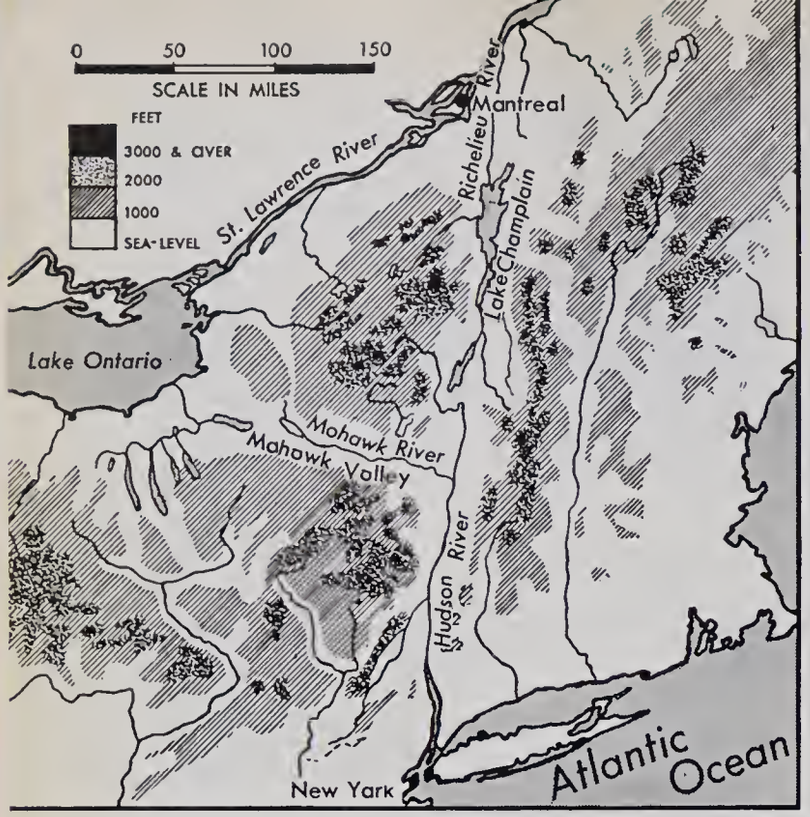
A map of the eastern United States.

Now you see why the cities of the coast, especially New York, became so large and important; most of the goods going in or out of the country passed through them. Also, as you know, where there are good transportation facilities, industries appear.

New York became important first as a *shipping* centre and ocean port. Because New York is the ocean port that can be most easily reached from the Middle West, it receives more business than any other port. The opening up of the west and the building of the Erie Canal helped to make New York grow. Thousands of people live there who load and unload barges, trains, and ships. Many more work in the offices of trading companies and shipping companies.

Because good transportation facilities made it easy to bring raw materials to this area and to ship finished goods to other parts of the country and of the world, and because the large population of New York and the surrounding suburbs presents a good market, many manufacturers built their factories in or near New York. The factories around New York manufacture almost everything you can think of. The city is most famous for the manufacture of clothing, including everything from hats to shoes, and from inexpensive work clothes to costly evening gowns. Most of the factories are outside of New York itself, but in the city are the offices that look after the business affairs of the factories, and the stores that sell the goods.

New York is also a financial centre. Firms that look after investing money and forming new companies, insurance companies, and many banks have their main offices



You can find the routes through the mountains on this map.

there because New York is central to all the business of the country.

The city of New York became so crowded that to get more room, very tall buildings were built. Most pictures of the city show these very high skyscrapers. Most of the people who work in the city cannot live there because there are not enough houses and apartment buildings. Every morning they stream into the city by train and car from nearby towns and cities.

Boston. On the population map on page 112 you can see the great cluster of dots that stand for the people who live in New York or near it. Look farther northeast and you will see another thick cluster of dots. Boston is the principal city in this region of dense population. It is the capital of Massachusetts.

Boston is not nearly as large or as crowded as New York, because it is not central to as large an area. It is important to *New England* because it is New England's largest seaport. New England is the name given to the states east of the state of New York. What are their names? You do not hear very much about passenger ships in Boston because most of the ships that use the harbor are freighters. They bring goods

A highway, a railway, and the Barge Canal follow the Mahawk Valley, carrying manufactured articles and farm products between the east and the west. This is the only easy lowland route across the Appalachians.

Philip Gendreau



for the people of New England and raw materials for the factories of New England, and when they leave they carry with them the products of New England.

Philadelphia. Philadelphia is another large seaport. If you look at Philadelphia on the map you may wonder why it is called a seaport, for it is not on the ocean; it is on the Delaware River, fifty miles from the ocean. However, the Delaware River is wide and deep. Ocean vessels sail right up to the city, and railways link it with other important places. Philadelphia has many factories, making a great variety of goods.

Baltimore. Baltimore is a little outside the area of the very densest population. It is on an inlet of Chesapeake Bay, which is really the wide mouth of a small river. This river gives Baltimore a fine harbor. People who live around Chesapeake Bay send many products to Baltimore to be exported. Coal from the western side of the Appalachian mountains is the heaviest of the goods exported through Baltimore.

Washington, D.C. Washington is on the bank of the Potomac River, but it is not a seaport because the Potomac is not deep enough for large vessels. Washington has few factories and little business of the kind that you find in the seaport cities. Still, Washington is in some ways the most important city in the United States. It is the capital of the country.

The President of the United States lives and works in Washington, the members of Congress, which is like our parliament, meet in the Capitol Building in Washington, and Washington is the headquarters for all the government departments, just as Ottawa is the headquarters for the government of Canada.

THE REGION OF DENSE POPULATION

In the region of dense population millions of city people work in factories. We cannot tell you about all of the things that they make. We shall pick out just a few of their products.

TEXTILES IN NEW ENGLAND

Because New England was one of the first parts of the country to be settled, it was one of the first places to be industrialized. Textiles were the most important industry. Cotton was brought by boat from the southern states. The cotton was made into thread and cloth in New England because New England had the right amount of moisture in the air and rivers to supply water power to the mills. The air in the South is dry, and the cotton thread breaks if it is spun there. Cotton for the New England mills still comes from the South. Some of it still comes by boat to Boston and the other seaports, and some of it comes by train. Wool, too, comes by ship and train to New England.

MANUFACTURING IN THE MOHAWK VALLEY

After the Erie Canal was dug, and the railways were built along the Hudson-Mohawk route, more people moved to this region. Many manufacturers chose the cities in the Mohawk Valley for their factories because of the good transportation.

Suppose we look at some of these manufacturing cities, starting with Buffalo.

Buffalo. Buffalo is on Lake Erie, at the western end of the Erie Canal. Railways that follow the Mohawk River valley go through Buffalo, and railways also run



James Sawders

At the right a steel mill is lighted by fires from its furnaces. You can see the lights of Pittsburgh down the river.

south from Buffalo. It has a good location for trade.

Wheat is sent east by boat on the Great Lakes to Buffalo. Buffalo, like Winnipeg, is a meeting point between two regions. Because so much wheat comes to Buffalo, the city has large flour mills.

Much of the ore from around Lake Superior goes to Buffalo. Buffalo has a large steel mill, but much of the iron ore is sent for smelting to cities that are nearer to the Pennsylvanian coal fields.

Other cities in the Mohawk Valley. Many of the cities along the Mohawk Valley are famous for special industries. One such city is Rochester. Its best-known industry is the manufacturing of cameras, films, and photographic equipment of all kinds. There is no special reason why this industry should be at Rochester. A camera manufacturer chose the place long ago for his factory, and because that is where the men who know how to make cameras live, other camera factories have been built there in order to be near the supply of skilled labor. Find Rochester on the map on page 107. The cities mentioned in the following paragraphs are also on this map. When you find a new place name, find it on the map.

There is a special reason for some of the industries of Syracuse, farther east. It has salt wells. For a long time the manufacture and sale of salt was the biggest industry in Syracuse, but now the salt is used as a raw material in the manufacture of other products, such as soda. Soda is used in cooking, in medicines, and in products used for washing clothes.

The great industry of Rome is the manufacture of articles of copper. Utica, still farther east, has knitting mills and factories that manufacture heating equipment, cooking equipment, guns, and tools. The big

industry of Schenectady is the making of electrical equipment.

A little way downstream from the eastern end of the canal is the city of Albany. It is the capital of New York. It is also a seaport, for ocean ships can come this far up the Hudson River.

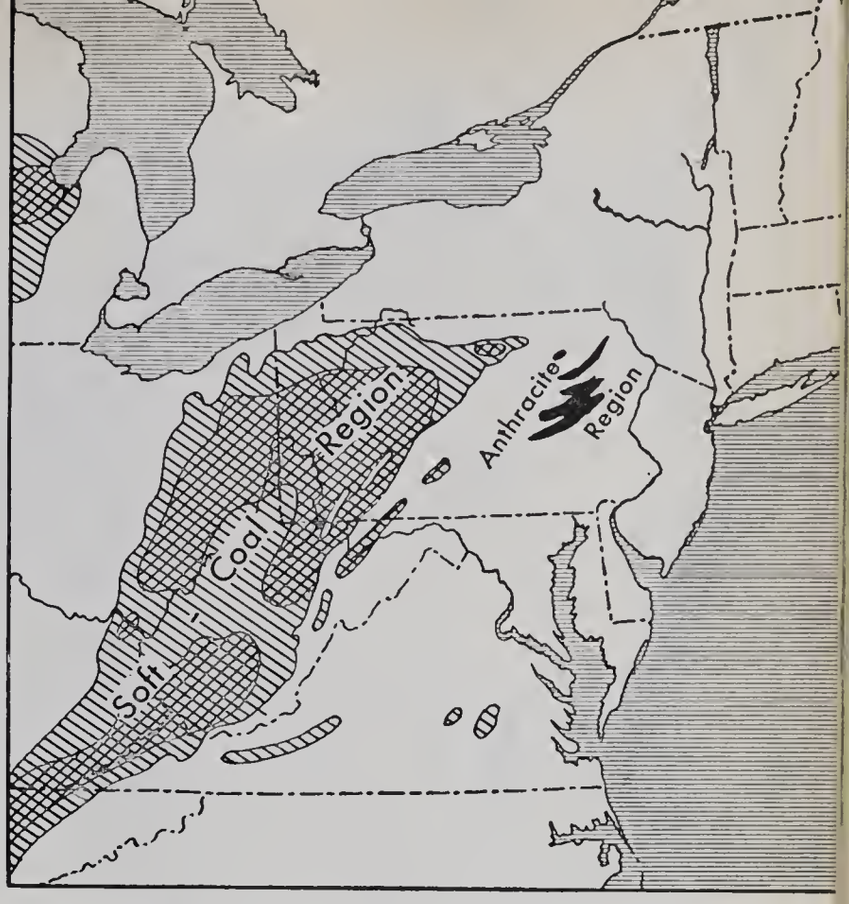
COAL IN PENNSYLVANIA VALLEYS

Turn to your population map and look at the western part of Pennsylvania; you will see a region of dense population, with the city of Pittsburgh at its centre. Find the Ohio River and trace it back into the mountains until you find the city of Pittsburgh. This region on the Allegheny Plateau is very rough country. It has many deep, crooked valleys, and hills between the valleys. You will not often find so many people living in such rough country. If you look at the map on this page, you will be able to find out why people live there. The great *soft-coal* region of the Appalachian Mountains begins in northern Pennsylvania and stretches far to the southwest. Most of the mines are in the parts shaded with crossed lines.

Some of the best *coking coal* in the world is there. It is such good coal that people who live far away from the mining region buy it. The people of New England get most of their coal from there. The coal is sent by train to Baltimore or to Norfolk, Virginia, to be loaded on ships bound for New England. Ontario gets most of its coal from Pennsylvania. Coal is also shipped west.

Coal barges on the rivers carry millions of tons of coal from the mines to the steel mills. Railways carrying coal also run along the bottom of the valleys beside the rivers. Why do railways keep to the river valleys in hilly country?

Pittsburgh. Pittsburgh was built to be a trading town because it was located where the Allegheny and Monongahela rivers join



Coal regions in the East. Most of the mines are in the areas covered with crossed lines.

to form the Ohio River. The Ohio, of course, was an important transportation route, and because Pittsburgh grew up where the Ohio River began, the town became important too.

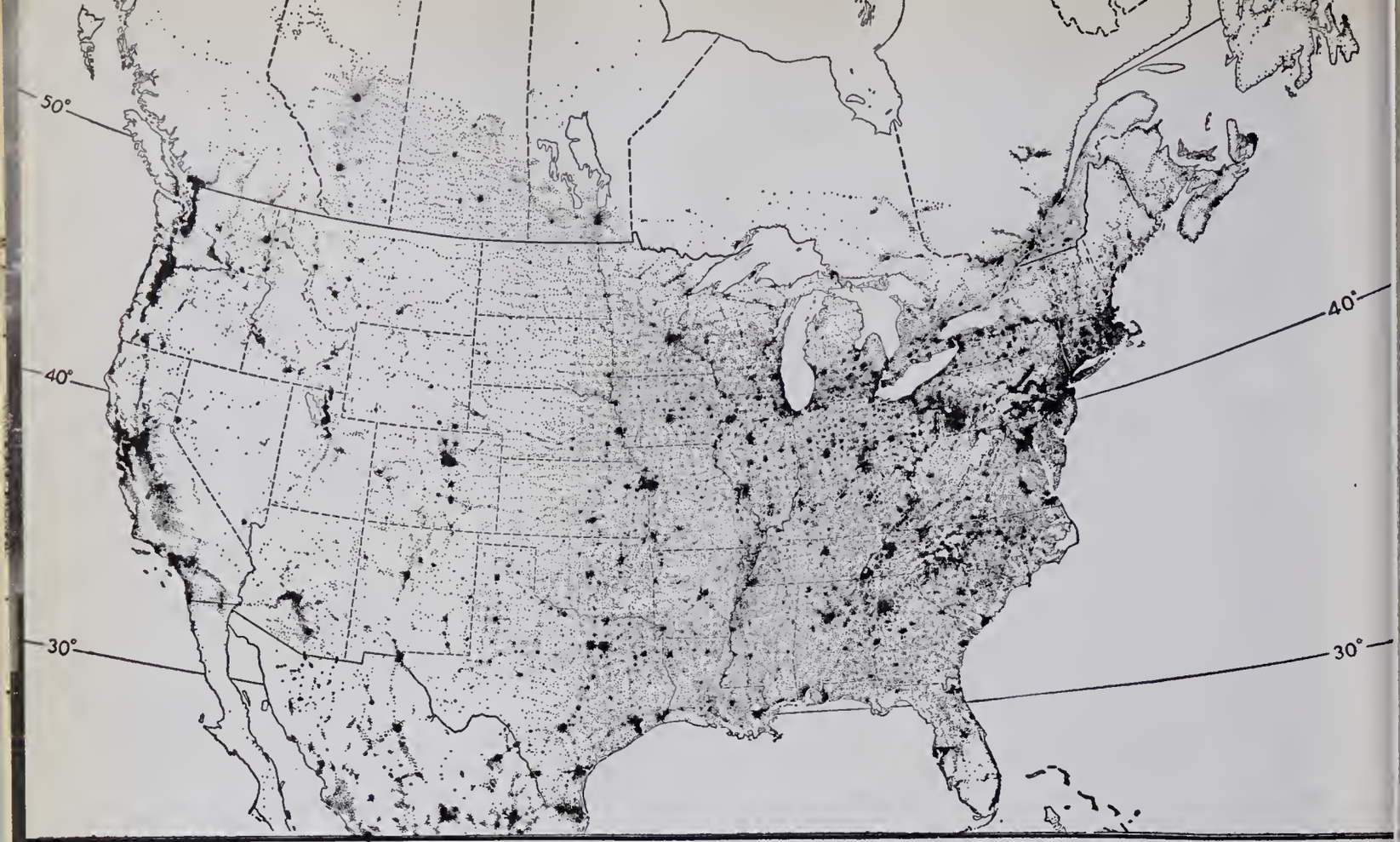
When coal was discovered in this region, Pittsburgh soon became an important steel city because the same advantages of transportation that made it a trading centre also made it easy to bring the iron ore and coal to the city and to take away the finished products. Much of the iron ore that goes to Buffalo finally reaches Pittsburgh.

Pittsburgh has manufacturing plants that make glass, electrical equipment, plumbing fixtures, food products, and many other articles, but the most important industry in Pittsburgh is steel.

Most of the other steel mills in this region are beside rivers. Why?

FOOD FROM LAND AND OCEAN

Millions of people live in these areas of dense population, the areas in and around the large cities that we have discussed. The city people, of course, provide a good market for farm products, but the region



Population map of Canada and the United States.

of dense population is not really a farming region.

There must be a reason why the land is not used. Think about the coast lands. Around the many bays and inlets of the coast there are wide marshes. This land cannot be used as farm land. In many places near the coast, the soil is sandy. Many plants do not grow well in sandy soil. However, sandy soil is good for vegetables. If you look at the products maps of the United States, you will see that the vegetable map is the only one that has many dots in the region of dense population. Use the index to find the products maps.

In the hilly arcas, most of the farms are in thc valleys. Along most rivers there is a little level land. This land is sometimes called *bottom land* because it is at the bottom of the river valley. On some of the hilly lands there are dairy farms. The cities must have a supply of fresh milk. If the slopes are not too steep, cows can graze on the grass that grows there.

The bottom land of the Connecticut River valley is some of the best farm land in New England. Farmers there grow vegetables, grain, and hay. They keep dairy cows. But their most famous crop is tobacco. It is some of the best tobacco grown in the United States and is used in making cigars.

New England has many fishermen. Can you tell why? New England is near the fishing banks, the coastline has many inlcts that make good harbors, and the dense population gives the New England fishermen a good market for their fish.

Farther south in Baltimore there are big canning factories where oysters from Chesapeake Bay are canned. Oysters are also shipped out from there fresh or frozen.

FOREST INDUSTRIES IN NEW ENGLAND

Years ago nearly all the good trees in New England were cut, and for a long time no one could use this cut-over land for anything because the soil was too poor or too

stony for farming. It takes a long time for trees to grow, but now the forests have grown up again and form the basis of a thriving industry. The people of New England need their forests and are not going to let them disappear again. They plan to cut the trees, of course, but only as fast as new trees can grow. Trees are the best crop for such land, and by practising forest conservation the people of northern New England are making sure that the forests stay. Some of the wood is cut into boards for building, but most of it is used to make pulp and paper.

WHERE EAST AND SOUTH MEET

Turn to the map of the United States on pages 102-103. We are going to look at the land south of the state of Pennsylvania, at the states of Delaware, Maryland, Virginia, and West Virginia.

The lowland in the northeast is quite narrow, but as you follow it south you see that it becomes wider. This gently rolling lowland is called the coastal plain.

West of the coastal plain the land becomes a little higher and the hills become a little steeper. This region is the Piedmont. The word *Piedmont* means foot of the mountain. This hilly land is called the Piedmont because it is the land at the foot of the Appalachian Mountains.

The Appalachian Mountains are made up of long, high ridges with many deep, long valleys between them. The people live in the valleys, where they can grow wheat, corn, and hay, and keep cattle. On the hilly mountain sides, sheep are pastured. Apples and some peaches are grown in the valleys. The mountain slopes are covered with forests, and many farmers spend the winter months cutting lumber. The trees they cut are sold to large sawmills or paper mills, which are located on the rivers.

Farming on the coastal plain. You know that this southern region has a little longer growing season than the region farther north. Spring comes slightly earlier. The truck farmers make good use of the early spring. They get their first vegetables to market a little earlier than the farmers

A field of cabbage on the coastal plain in Maryland. The farmer is spraying to kill harmful insects.

Courtesy Standard Oil Company (N.J.), photograph by Vachon



farther north can. Early vegetables sell for the highest prices. The farmers make a lot of money by having vegetables to sell early in the season.

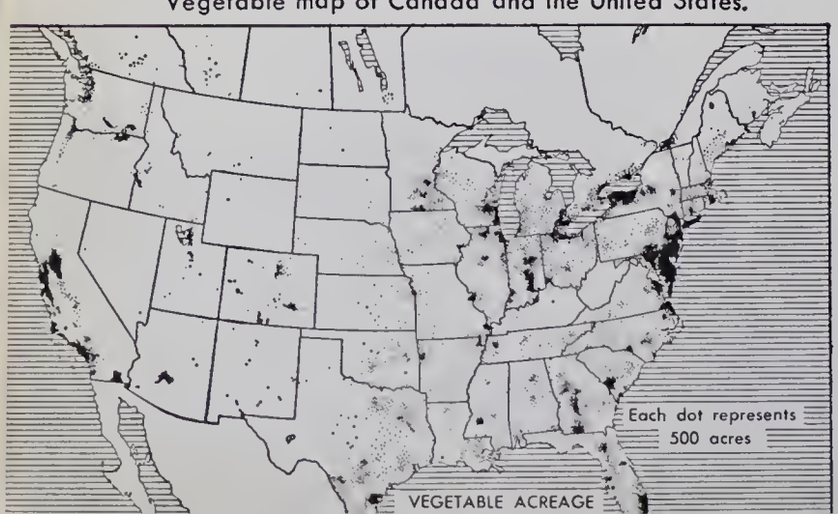
Look at the vegetable map on this page. Each dot on that map stands for 500 acres of land used for growing vegetables. You see that the land east of Chesapeake Bay is solid black. West of the bay, too, there are solid black areas.

In southern Virginia, many farmers grow a crop that is not grown farther north — peanuts. Peanuts need a long growing season. A small part of the coastal plain in Virginia has a growing season more than seven months long. Find it on the growing-season map on pages 10-11. That is the peanut region.

Peanuts are a valuable crop. Some are sold to be eaten from the shell or to be made into salted peanuts or peanut butter, but more are sold to the oil presses. At the presses, machines squeeze oil out of the peanuts. The oil can be used in cooking, and it is a raw material for many industries. What is left of the peanuts after the oil has been squeezed out is good feed for cattle.

Peanut vines make good hay for farm animals. Animals eat some of the nuts, too. When the peanuts are harvested, a great many are left behind in the soil or on the ground. The farmers turn hogs into the fields to eat the peanuts. Hams from these peanut-fed hogs are carefully cured and smoked. They are famous all over the country and always bring a high price.

Vegetable map of Canada and the United States.



Farming on the Piedmont. Now suppose we climb up to the Piedmont region. Tobacco is one of the special crops of the Piedmont. Perhaps you know that the early settlers grew tobacco on the coastal plain. Not much is grown there now. The soils on the Piedmont are better for tobacco than the coastal plain soils. The sandy coastal-plain soil is not very fertile. After a few years, tobacco takes so much fertility out of the sandy soil that it cannot be used for tobacco any more unless it is heavily *fertilized*, and this is a very expensive process.

Industries and cities. In the southern part of the East, farms supply raw materials for many industries. In the tobacco region the towns and cities have tobacco factories. In the peanut-growing region there are factories making peanut products. Where the farmers grow many vegetables, there are canning factories.

Nearly all the mountains are covered with forests. There are large forests on the Piedmont and coastal plain, too. Where there are forests, there are industries that use wood as raw material.

Many towns have pulp and paper mills. Most of them use the wood of cone-bearing trees as raw material. The best broadleaf forests still standing are in the mountains. Many mountain towns have sawmills and factories that make furniture and other articles of wood.

You have found textile mills almost everywhere in the East. The regions you are studying now have many of them too. There are cotton mills, woollen mills, and rayon mills. Many cities have factories that manufacture clothing.

Most of the factories in the mountain and Piedmont regions were run by water power. Now most of the water power is made into electricity. Some manufacturers have chosen this part of the country for their plants so that they can use the electricity for power to run their machines.

THE GEOGRAPHY WORKSHOP

I. THE WORLD IN YOUR COMMUNITY

Canada imports much *merchandise* from the United States. Find all of the things you can that were made in the eastern part of the United States. Look at labels in articles of clothing and on cans of food. Every book and magazine has a line that tells you where it was published. Look in your own home and in the stores of your community for things made in the eastern states.

II. WHERE IS THE EAST?

Use a globe and the maps in your textbook to answer the following questions:

1. On your classroom globe locate the part of the United States that we call the East. Move your hand over it. Now find the equator and the North Pole on the globe. Is the East about one-fourth, one-half, or three-fourths, of the way from the equator to the North Pole?

2. The first settlers in the East came from England, across the Atlantic Ocean. Is any part of the East as far north as England?

3. In which direction did the settlers travel on their way to America from Europe?

III. A TRIP TO THE EAST

You should know how far away this region is and how to get there. Get a road map of the United States and one of Canada. Choose a place in the East that you would like to see and then plan a trip to that place. You may draw a colored line on the map along the route you would follow to show the highways you would take.

You might also plan a sight-seeing trip through the East. You can make it a picture trip if you like. Magazines have many articles about interesting places. Railways, air lines, bus lines, and resorts often advertise. Some of them will be glad to send you folders with pictures, maps, and descriptions. When you write, be sure to tell them that you want the material for a school assignment.

A farmer carrying tobacco leaves to the building where it will be cured.

Courtesy Virginia Chamber of Commerce





THE UNITED STATES—THE SOUTH

There are many different kinds of people living in the South.

North America was discovered by the Spaniards. They landed in *Middle America,* but some of them settled in what is now the United States. In the South you can see Spanish-style buildings, and you may hear some people speaking Spanish.

French fur traders came down the Mississippi from the north. They founded the city of New Orleans. In that city you can still see old French-style buildings and hear the French language spoken. The people speak English, too, of course.

The settlers in the South had large farms called *plantations.* They brought Negroes from Africa to work in the fields and to be their servants. The Negroes were given food, clothing, and places to live in, but they could not earn any money, and they belonged to their master. About a hundred years ago all slaves were made free.

The original settlers were, of course, Indians. There are still Indians living in the South. (More than a third of the Indians in the United States live in Oklahoma because it was once an Indian reservation.)

Englishmen settled along the Atlantic seaboard north of Florida. As you know, they eventually gained control of all the land in the South.

WHAT WE CAN LEARN FROM MAPS

GETTING ACQUAINTED WITH THE SOUTH

In an area as large as the South, there must be many differences. If you consider that if Germany and Great Britain were put in Texas there would be land left over, and that Texas is only one part of the South, you will realize how immense this region is.

On an outline map of the United States draw a colored line around the South except along the coast. The map on page 116 shows where to draw it. Now suppose we make a game of finding the southern states. When you have identified a state in the following list, print its name on an outline map.

1. The largest state in the United States. It reaches farther west than any other southern state.
2. The state that reaches farthest south. Most of the state is a large peninsula.
3. The state in which is the mouth of the Mississippi River.
4. The state that reaches farther north than any other southern state.
5. One southern state with long, narrow islands at its eastern side. The western end of the state is in the Appalachian Mountains. The parallel of 35° north latitude crosses this state.
6. Another state with a name much like the name that you just wrote.
7. A large tributary of the Mississippi River crosses a state that has the same name as the river. The Mississippi River forms the eastern boundary of this state.
8. A state whose western boundary follows the Mississippi River and reaches from the parallel of 35° north latitude to the Gulf of Mexico.
9. Another state that reaches from the parallel of 35° north latitude to the Gulf of Mexico.
10. One state that is entirely north of the parallel of 35° north latitude and reaches from the Mississippi River to the Appalachian Mountains.
11. A state that reaches from the Atlantic Ocean on the southeast to the parallel of 35° on the north. Part of the southern end of the state is a large swamp. There are mountains in the northern part of the state.

COASTAL PLAIN AND HIGHLANDS

1. In the southern part of the East you found three surface regions. Do these regions extend into the South?
2. There are three regions of highland in the South. Find them on the map on pages 102-103. The highlands in the western part of Texas are not really mountainous. They are part of the Great Plains that stretch northward to the Arctic Ocean.
3. What difference is there between the coastal plain in the East and in the South? Describe exactly where the coastal plain is in the South. Which state is all coastal plain?

A Mexican farm worker helps to control the water in this irrigated cotton field in western Texas.

Ewing Galloway



CLIMATE AND VEGETATION

1. Look at the growing-season map. The long growing season is extremely important to the people of the South, as you will see. It puts money in their pockets. Does any other part of North America have as long a growing season?

2. Describe the vegetation of the South. How many different types of vegetation has it, and where are they found? Look on the map on pages 12-13.

3. Why do cone-bearing trees grow in some parts of the South and not in others? They are a different *species* of cone-bearing trees than those that grow in Canada, as you can guess by looking at the growing-season map on pages 10-11. The southern pines grow very quickly in the long growing season of the South. They supply the raw materials for the pulp and paper mills of that region.

4. Why are there grasslands in the western part of Texas? The grasslands in Florida are swamps. What types of vegetation are found in the South that are not found in any of the regions that we have discussed so far?

WHERE PEOPLE LIVE

1. You can learn something about the South from the population map. Is it a region of great cities like the East? Has the South any cities? By comparing the population map with the physical-political map, you can find the names of the cities that are located at the places where the population is dense.

The map shows that the population is fairly dense, but that it is spread evenly over the whole area. Just by looking at this map you should be able to tell that the South is farming country.

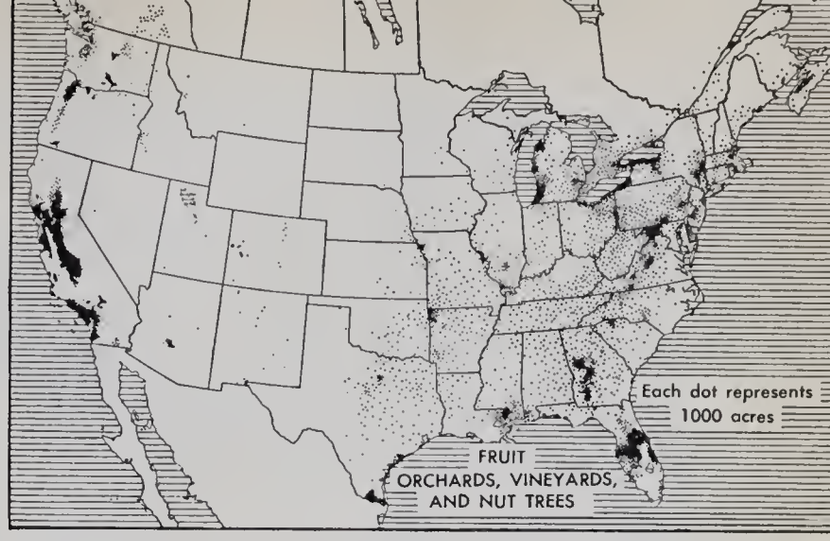
2. Do the vegetation, physical-political, rainfall, or growing-season maps explain why there are fewer people living in western Texas.

THE SOUTH IS A FARMING COUNTRY

SOUTHERN CROPS AND CLIMATE

In many ways, southern farms and crops are like those in the northern states. Most southern farmers raise corn; they have vegetable gardens and fruit orchards; they raise cows, hogs, and chickens; they grow grain and other feed for their animals and keep part of their land in pasture. They differ from northern farmers in that they can grow some crops that cannot be grown farther north, many of their crops ripen earlier in the year, and their pastures remain green for most of the year so that they do not need to provide as much hay and other winter feed for their animals. It is the long growing season that makes the difference.

Early vegetables. The truck farmers of the South are not near the area of dense population and so must ship their products long distances to market. The vegetables are sent north by fast truck or train, and many of them must be packed in ice to keep them fresh. The shipping costs add quite a bit to the price of the vegetables, but the southern farmers are able to compete with the farmers who live near the large cities. In the Carolinas and Georgia, farmers grow vegetables in the early spring, and farther south vegetables will grow even during the winter. People in the north will pay higher prices for these vegetables because when they are sold there are no other vegetables available. This is one way southern farmers make use of the long growing season.



Fruit and nut map of the United States and Canada.

Fruits. On most of the coastal plain, fruit is not an important crop, but there are a few important fruit-growing regions there. The largest coastal plain fruit region stretches across the middle section of Florida. The warm, frost-free climate makes it possible to grow *citrus fruits* there — oranges and grapefruits and lemons. Citrus fruits, and vegetables too, are grown in the irrigated southeast corner of Texas. These two regions are farther south than any other part of the United States.

The smaller fruit plants, such as strawberries and watermelons, are found in most parts of the South and have the same advantages in the northern markets as do the early vegetables. Georgia watermelons are especially well-known.

Fruit trees are found all along the highlands of the Appalachian region. The fruit belt of the Piedmont extends from the apple region of Virginia to the peach region of Georgia. The peaches grown on the Piedmont of Georgia are especially noted for their quantity and quality.

Nut crops in the South. The peanut region of Virginia extends south into North Carolina. Farther south there is an even larger peanut region that covers southwestern Georgia, southeastern Alabama, and the northernmost part of Florida. Many farmers in eastern Texas also grow peanuts. Of course, peanuts are grown in all parts of the coastal plain and Piedmont, but most of the nuts come from the places mentioned. Remember all the ways in which peanuts can be used. Other nuts, pecans for example, are also grown in the South.

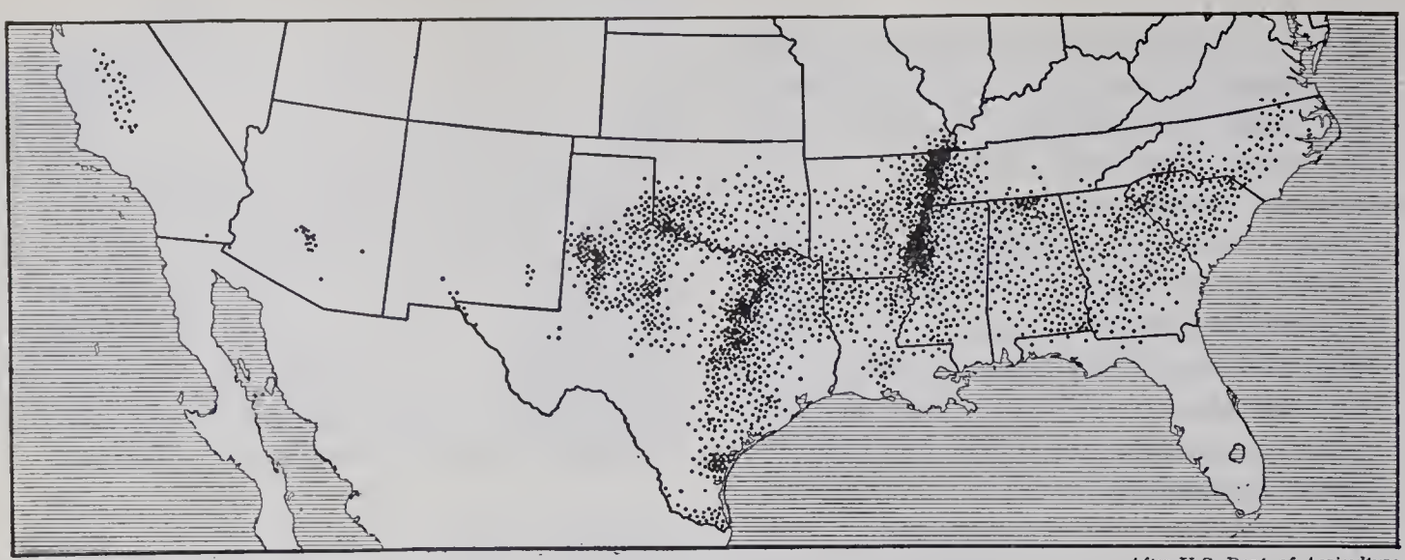
A field of sugar cane in Louisianna.

F.S.A. photograph by Lee



Sugar cane and rice. Sugar cane, a tall, bamboo-like plant of the *grass family*, needs a warm, moist climate to grow well. The northern part of the South is too cold for it, and even the southern part of the South is just barely warm enough. The edge of the seven-months' growing season marks the northern limit of the sugar-cane region. The edge of the 40-inch rainfall area marks the western limit. Almost everywhere in the warmer part of the South, farmers raise a little sugar cane. They squeeze out the juice and boil it until it becomes sweet syrup. Sugar is refined in only two regions, where sugar cane is grown in larger quantities. The first, and by far the largest, area is the swampy section of the Louisiana coastal plain west of the Mississippi River. The smaller area is directly south of Lake Okeechobee, the large lake in Florida.

Rice needs long, hot summers and plenty of water. The water is needed because the rice can grow only in fields that are several inches under water. The swampy land in southern Louisiana is good for rice. Rice



After U.S. Dept. of Agriculture

A cotton map. One dot stands for 10,000 acres of cotton

grows on the grassland region that stretches along the Gulf of Mexico in Louisiana and Texas. There is another rice region in Arkansas on the lowland along the Mississippi River.

The cotton belt. Many Canadians think that cotton grows in all parts of the South, but actually it grows only in what is known as the cotton belt. This covers the region that has a good climate for cotton. To the north of the cotton belt the growing season is too short for cotton, and near the coast there is usually heavy rain in the fall when the cotton is ready to pick. By comparing the map of cotton production with your other maps, try to discover what growing season and rainfall are needed for cotton. Much of the cotton grown in the westernmost part of the South is irrigated and so is not in the true cotton belt. The picture on page 117 shows an irrigated cotton field.

As soon as the cotton gin, a machine that takes the seeds out of the cotton cheaply, was invented, the people of the South, especially in the Piedmont, planted cotton on huge plantations. When steamboats appeared on the Mississippi to provide transportation, cotton plantations appeared on the broad bottom land of that river. This region was even better than the land farther east for growing cotton, and your cotton map shows that it is still the place where the most cotton is grown. Cotton needs very fertile soil. For thousands of years the Mississippi has been flooding in the spring and leaving behind it the rich topsoil that it has carried down from farther north.

Another important cotton region is the rich Black Prairie of Texas. If you look at the vegetation map you will see this grassland region in eastern Texas, separated by forest land from the great grassland region.

The cotton belt is not one solid region of cotton. Between the cotton fields there are fields of corn and of vegetables. There are pastures and fields of hay. Sometimes for a long way there are no fields at all — just woods.

Tobacco in the South. On page 114 you read about the tobacco region in Virginia. This region does not stop at the border of Virginia, but extends southward into North Carolina and even South Carolina. North Carolina is the leading producer of tobacco in the United States. In the Carolinas most of the tobacco grows on the coastal plain. There is another tobacco region on the Cumberland Plateau in Tennessee and Kentucky.

Even in the tobacco regions most farmers use only a few acres of their farms for

tobacco, because tobacco is hard on the soil, and even a few acres of tobacco take a great deal of the farmer's time. The field must be carefully cultivated, and the leaves must be picked one by one.

Wheat. Look at the map on pages 102-103 and find the narrow strip of Texas that extends far to the north. We call it the Texas Panhandle. Just north of it you find a narrow strip of Oklahoma. We call that the Oklahoma Panhandle.

Find these regions on your vegetation map, pages 12-13. You know that grasslands are usually good wheat lands. The grass region in the panhandles and eastward in Oklahoma produce a large proportion of the total amount of wheat raised in the United States.

Animals in the western South. Many people think of Texas as being mostly made up of cattle ranches. If you look at the beef-cattle map, you will see that there are a great many cattle in Texas. The first settlers to come to the western South were cattlemen; this is why so many people think of it as cattle country. The grasslands, and the long summers, make this country good for cattle. But the situation has changed since the early days. Farmers have moved into much of the land that formerly was used only by ranchers, and now there is little difference between eastern Texas and Mississippi and Alabama. From your reading you already know that Texas is a leading producer of cotton, and that vegetables and rice are grown there. Fields of corn, hay, peanuts, and alfalfa are mixed with pasture land.

It is when you pass into the drier western part of Texas that you find the miles and miles of ranch land. Only where there is water available for irrigation do you find farms in this region. You may wonder why the climate is considered dry when 20 inches is not too dry in many parts of Canada. Remember that water evaporates more quickly in the hotter climate.

If you look at the vegetation and physical maps, you will see that southern Texas is hilly and covered with desert vegetation. Some of this land is too dry and rough for cattle, but sheep, which can live on less and climb over rougher land than cattle, are raised in these areas. Southern Texas has as many sheep as the rest of the United States. Look at the sheep map on page 160 to see for yourself.

Angora goats, from whose long, silky hair *mohair* is produced, are found in the same regions as the sheep and in as great numbers. Mohair is woven into beautiful, soft material for clothing.

CONSERVING SOIL IN THE SOUTH

Have you ever watched water flowing over bare ground during a rain? It is almost sure to make a little channel, like a tiny valley. This little channel is a gully. The harder the rain, the more likely it is to make a gully. If nothing is done to stop it, the next rain will make the gully deeper and wider. After many rains the gully may become many feet deep and so wide that it spoils a whole field. This washing away of land, as you know, is called erosion. When

This is a picture of a cotton gin at work.

Courtesy Caterpillar Tractor Co.





Courtesy Soil Conservation Service



Courtesy Soil Conservation Service

One way to stop erosion. The pictures were taken five years apart at the same spot. A vine called kudzu was planted on the badly eroded land. It keeps the soil from washing away.

farm land is eroded, the results can be serious, for it is the topsoil, which is the most fertile soil, that is washed away.

Erosion is worst on steep slopes and where the ground is bare. Because there is little erosion on grassland and forest land, many people believe that the roughest land with the steepest slopes should be forested and the gentler slopes should be used for pasture. As you know, this is often done.

Erosion is a problem for all farmers, but it is just a little more serious in the South. Most of the South is hilly. There is little erosion in the north in the winter. When the soil in the north is frozen it cannot be washed away. Snow melts a little at a time, and the water does not run off quickly, carrying the soil with it. The South has warm winters, and heavy rains fall more often in the southeast than in the north.

The crops that have been grown in the South have added to the problem. Years ago, in some parts of the South, farmers used most of their land for tobacco. In other parts of the South, farmers used most of their land for cotton. Nearly all southern farmers raised corn. All three crops are hard on the soil. They are planted in rows with bare ground between the rows. This allows the rain water to wash away the bare soil. After the crop has been harvested, the soil is left bare all winter. During the winter rains, still more soil is washed away.

For a long time no one knew how to farm without damaging the land. But scientists have found ways to do it. Here are some of the things that many farmers do to conserve their land:

1. They grow trees, or grass for pasture, on the steeper slopes.
2. They do not grow *row crops* two years in succession on the same land. If a farmer plants cotton or corn in a field this year, some of the fertile topsoil will be washed away. Next year he will plant a crop that covers the ground closely. Plants to be cut for hay are usually best.
3. They plough around a hill so that each furrow cuts across the slope. They plant corn and cotton in the same way. When this is done, each row catches the rain water and slows it up. When it flows slowly, water cannot carry away much soil.
4. They divide their hill land into strips. On every other strip they plant corn, and on the strips between they plant hay crops.

The close-growing plants of the hay crops slow up the water and catch the soil that has washed down from above.

5. They try to prevent gullies from forming or stop them from spreading if they do form. Water must run off the land after a heavy rain. Many good farmers study the land to see where the water is likely to form a little stream. They then plant grass in such places so that the water cannot wash away the soil. Study the pictures on the opposite page to see what the farmer did to stop a gully from spreading after it had already started.

INDUSTRIES DEPEND UPON RESOURCES

The South is farming country, but it is becoming more than that. Years ago there was almost nothing to do in the South except farm, but the South is now gradually becoming more and more industrialized.

INDUSTRIES OF FARMING REGIONS

If you are wearing anything made of cotton, it is quite likely that the cotton came from the South, and perhaps the cloth itself was made there. At one time, most of the cotton had to be taken to New England to be spun and woven because the climate of the South was so dry that the thread broke when it was being spun. Now that it is possible to keep buildings damp artificially, cotton factories have been built in the South.

Cotton thread is not the only product of cotton plants. The seeds are sent to oil mills that make cotton-seed oil. These mills and factories that use oil as their raw material are scattered through the cotton belt.

Wherever you find a special crop, you find factories preparing that crop for use. In the tobacco regions there are factories for making cigarettes and cigars, and for preparing tobacco for pipes. In the peanut regions, there are factories that make peanut oil, peanut butter, and other peanut products. Sugar-cane regions have sugar mills and refineries. Vegetable and fruit regions have canning factories and freezing plants.

FOREST INDUSTRIES

Because of the long growing season in the South the trees grow faster there than they do in the north. They have a longer time each summer in which to do their growing. This means that the trees that are cut down can be replaced in a shorter time than is possible farther north, and therefore a higher proportion of trees can be cut without destroying the forests.

The South has much land that will probably always be covered with forest. Mountain slopes, rough hilly land, very sandy soil, and swampland are best used as forest land. The South has plenty of all these types of land.

The South has a great region of cone-bearing forest on the coastal plain. Find it on the vegetation map. You know that some of this forest has been cleared, because you found crops such as peanuts, oranges, pecans, and vegetables, growing there. But there are still large areas of forests that have not been cleared.

Most of the trees are pines. People get a valuable product from these pines. When the bark is cut, a sticky juice called resin oozes out. Workmen cut grooves in the bark and place a cup below the grooves to catch the resin.

When the workmen have collected enough resin, they take it to a factory called a turpentine still. There the resin is separated into two products — rosin and



Oil fields in the South.

turpentine. Turpentine is used mainly in paint and varnish, but it is also used in medicines and in poisons for killing insects. Rosin, too, is used in paint and varnish as well as in soap, paper, linoleum, floor polish, and many other products.

Making paper is a great southern industry. Nearly every section of the South has paper mills.

THE EASTERN HIGHLAND INDUSTRIAL REGION

Turn to the population map. You can see one region of fairly dense population in the eastern part of the South. It is at the southern end of the Appalachian region. Most of the people shown on the map live in the valleys and on the Piedmont. The population is not as dense there as it is in the industrial regions of the East, but it is dense compared to the population of the rest of the South.

Hydro-electricity. Why do you find industries in this section of the South? The region, because it is by the mountains, has many swift streams that can be made to produce electricity for cotton mills and other factories. Fine forests of broadleaf trees grow in the mountains and on the Piedmont and furnish raw material for another big industry – furniture making. The southern Piedmont is one of the most important furniture-making regions in the whole country.

The Tennessee River. Find the Tennessee River on the map on pages 102-103. See how the river spreads out to form one long, narrow lake after another. Those lakes are man-made, and each of them is formed by

water held back by a dam. There are many dams in the Tennessee River. Most of the dams have powerhouses beside them. Manufacturers have built factories in the region because of the electricity created by the dams.

The dams were built to do more than provide electricity. They have two other purposes. First, they help to prevent floods in the springtime when the spring rains and melting snow in the mountains send great quantities of water rushing along the river. If too much water comes down the river, the river bed cannot carry all the water away and the water spreads out and covers the bottom land. Dams hold back the water and allow it to flow down the river in quantities small enough for the river to handle.

Secondly, the dams are meant to make the Tennessee a better transportation route. The river had shallow places, and when the water was low, boats had trouble getting through. By keeping a steady flow of water going down the river all the year round, the shallow places are kept far enough below the surface of the water. Boats and barges go through locks at the dams.

Iron and coal. Farther to the southwest, in the ridges and valleys at the end of the Appalachians in Alabama, there is another industrial region. The low mountains of Alabama have iron and coal in them. Birmingham and other cities nearby have great steel factories. Many other manufacturing plants in the region use iron and steel as raw materials to make such things as machinery, stoves, furnaces, and iron pipes.

OIL IN THE WESTERN SOUTH

Oil is one of the most valuable resources that any region can have. It is so valuable that people drill wells wherever oil is found. There are oil wells on farms and ranches, in city yards and gardens. There are oil wells in the marsh lands along the coast of Louisiana and Texas. There are even underwater oil wells out in the Gulf of Mexico. The *derricks* are set up on platforms over water that may be many feet deep. The map on the opposite page shows you where the oil regions are.

As you might expect from what you know of the oil wells in Canada, natural gas is also found in the oil region of the South. It is taken by large pipelines to the cities that use it. Some of these cities are hundreds of miles from the oil region.

Oil, too, is taken away by pipeline. Tulsa, Fort Worth, Houston, and Baton Rouge

Lumbering in Arkansas. The men at the left are cutting down a tree. At the right is a sawmill.

Courtesy U.S. Forest Service



Courtesy U.S. Forest Service



are some of the cities that have big oil refineries.

Oil and gas are good fuels. Many manufacturers have built factories in the oil and gas regions so that they can use these fuels. Other factories have been built there because they use oil and gas as raw materials.

THE WARM SOUTHERN COAST

Southern fishing. You may not think that climate has much to do with fishing, but it has. The sponge-fishing industry of the west coast of Florida is an example of the effect that climate has on fishing. Sponges come only from water that is always warm.

Shrimp fishing is a southern business. Shrimps live along the coast of the Gulf of Mexico and along the southern part of the Atlantic coast. They do not live in the cold water farther north. Shrimps provide work for more than the fishermen.

Many people work in factories where shrimps are canned, frozen, or prepared for market in other ways.

The tourist trade. Many people go south in the winter because they want to be where the weather is warm. Some stay all winter, and some stay for only a short time. So many people travel to the South that there are thousands of people there who earn their living by looking after the visitors.

Many southerners make a living by working in the hotels, restaurants, stores, and stands that are used by tourists. Farmers are helped too. Because of the tourists, they have a better market for their food products.

Tourists bring business to railways, air lines, and bus lines in the South. They buy gasoline and oil for their automobiles. They buy clothes and other articles for themselves, and souvenirs to take home.

A resort area in Florida. Notice the palm trees.

Courtesy City of Miami



THE SOUTHERN CLIMATE

In our study of the South, we could not get away from climate. We talked about climate as a resource that southern farmers use. Because of the long growing season, they have vegetables and fruit crops to market when nothing will grow in the north. They can also raise crops that will not grow in the north at all. You can name some of those crops.

But we are not through with climate when we finish talking about farmers. Warm winters bring thousands of visitors to the South. Taking care of tourists has become a big business. Tourists furnish a market for many southern products, from nuts to manufactured articles. Then think about southern forests. The pines that supply us with turpentine and rosin grow only in the warm South. Other trees that we use for lumber grow only in the South. Cypress is an example. All kinds of trees grow faster in the south than they do in the north because the growing season is longer. This means that southern trees are ready to be cut for lumber or pulp years sooner than northern trees.

Fishermen in warm southern waters catch shrimps and kinds of fish that northern fishermen do not catch. Sponge fishermen work only in the warm water near the coast of Florida.

Even in manufacturing, the warm weather makes a difference. Think of the paper mills that use wood from fast-growing trees.

Many interesting things are true about the South. You will probably not remember them all. But do remember what a difference the long growing season and warm winters make to the people of the South.

We sometimes say that southerners sell their climate. Can you explain now what we mean by this?

THE GEOGRAPHY WORKSHOP

I. THINGS TO DO

There are many things you can do that will help you to understand the South.

1. Collect pictures. In magazines you find many articles about places in the South. You also find advertisements for southern resorts. When your class has a good collection, select the best for an exhibit. You might like to arrange your pictures around a map. Fasten a string from each picture to the right place on the map.

Find out all you can about the place shown in each picture. From the maps in this book get all the information you can about its latitude, altitude, rainfall, and growing season.

Use the pictures for a class discussion. Maybe they show the natural vegetation. Maybe they show some of the natural resources of the region. They show people doing things. Are the people in the pictures using special resources of the South?

2. Make a list of all the southern products named in this chapter. See how many of them you can find in the stores. Make sure the things you find really came from the South. You will have to read labels and ask questions.

3. Plan a trip to the South. Choose a part of the South that you would like to visit. Your whole class may work together on the same trip, or you and your classmates may work in groups on different trips.

Each group will need a large road map of the United States. You might also ask for folders at the railway station and the airport. Ask for folders showing how you can get from your home to the place you have chosen.

Here are some of the questions you will need to think about.

How far away is the place you have chosen? How long will it take you to get there?

In what general direction will you be travelling? Point toward the place you are going to visit.

Will the clothes you are wearing now be suitable for the trip? If not, what else will you need to take?

Compare the place you are visiting with your own home. By now you know how to compare two places.

II. WHAT DO YOU KNOW ABOUT DAMS?

Choose the right endings for the sentences below. In most of the sentences more than one ending is correct.

1. In hydro-electric projects, dams are built:

a. to serve as bridges across the river.

b. to keep people from going up and down the river past the powerhouse.

c. to deepen the water, so that it will produce more power to turn the generators.

d. to hold back flood waters, so that there will be water to use all the year.

2. In irrigation projects, dams are built:

a. to form reservoirs in which water can be stored until it is needed.

b. to make the water deep enough for boats.

c. to raise the water to levels higher than the river bed.

d. to make the water flow out of the river bed in ditches.

3. Dams are built at narrow places in deep valleys:

a. so that the dam may be short.

b. so that the water behind the dam will be deep enough to furnish plenty of power.

4. Locks are often built beside dams:

a. so that the dam can be closed.

b. so that boats can pass the dam.

c. so that water can flow down the river past the dam.

d. to keep people out of the powerhouse.

5. Besides producing power and storing water for irrigation, dams may be built:

a. to prevent floods farther down the rivers.

b. to deepen the water for navigation.

c. to keep rivers from cutting their beds deeper.

d. to provide a good place for fish to lay their eggs.

A view of a dam in the Tennessee River. The lake extends several miles behind the dam.

State of Tennessee — Dept. of Conservation





THE UNITED STATES— THE MIDDLE WEST

The dark section on the map at the top of this page is known as the Middle West.

The Middle West produces more food than any other section of the United States. Indeed, few other regions in the world produce as much food. Middle western farmers raise plenty of food for themselves and for the many city people who live near them. They also ship food by the truckload and trainload to the cities of the East.

The Middle West has no special crops that grow just there, as the South has, but most parts of this section have the kind of climate that is best for some of the world's most important food crops and for the plants used as feed for farm animals. The surface, the soil, and the weather help to make the Middle West a great farming area.

If the Middle West specializes in anything, it is in animal products. Almost every farmer uses a large part of his land for pasture and feed crops. Clean, sleek milk cows and heavy beef cattle graze in the pastures. Fat hogs root in the fields, and sheep are scattered over grassy hillsides.

WHAT WE CAN LEARN FROM MAPS

GETTING ACQUAINTED WITH THE MIDDLE WEST

1. The Middle West is in many ways unlike any of the sections of the United States that you have studied. You will probably see one important difference when you first glance at the map on pages 102-103. What is it? If you do not see at once what the difference is, try looking for seaports in the Middle West.

2. On an outline map of the Middle West print the names of the states that make up this section of the country. You can tell where the Middle West ends on the east and the south because you have already studied the neighboring sections. Since Canada is at the north, you can easily tell how far the section extends in that direction. On the west, this section ends with the states that are straight north of Oklahoma. Look at the map on page 129 to check.

Now close your book and print the names of the states of the Middle West on an outline map of the whole United States. You should name thirteen states. This will test your memory of the name, shape, and location of each state. If there are any names of states that you do not know the first time you try, you will need to study them a little longer and try again. Which states look much alike? Which ones look quite different from the rest?

WATERWAYS

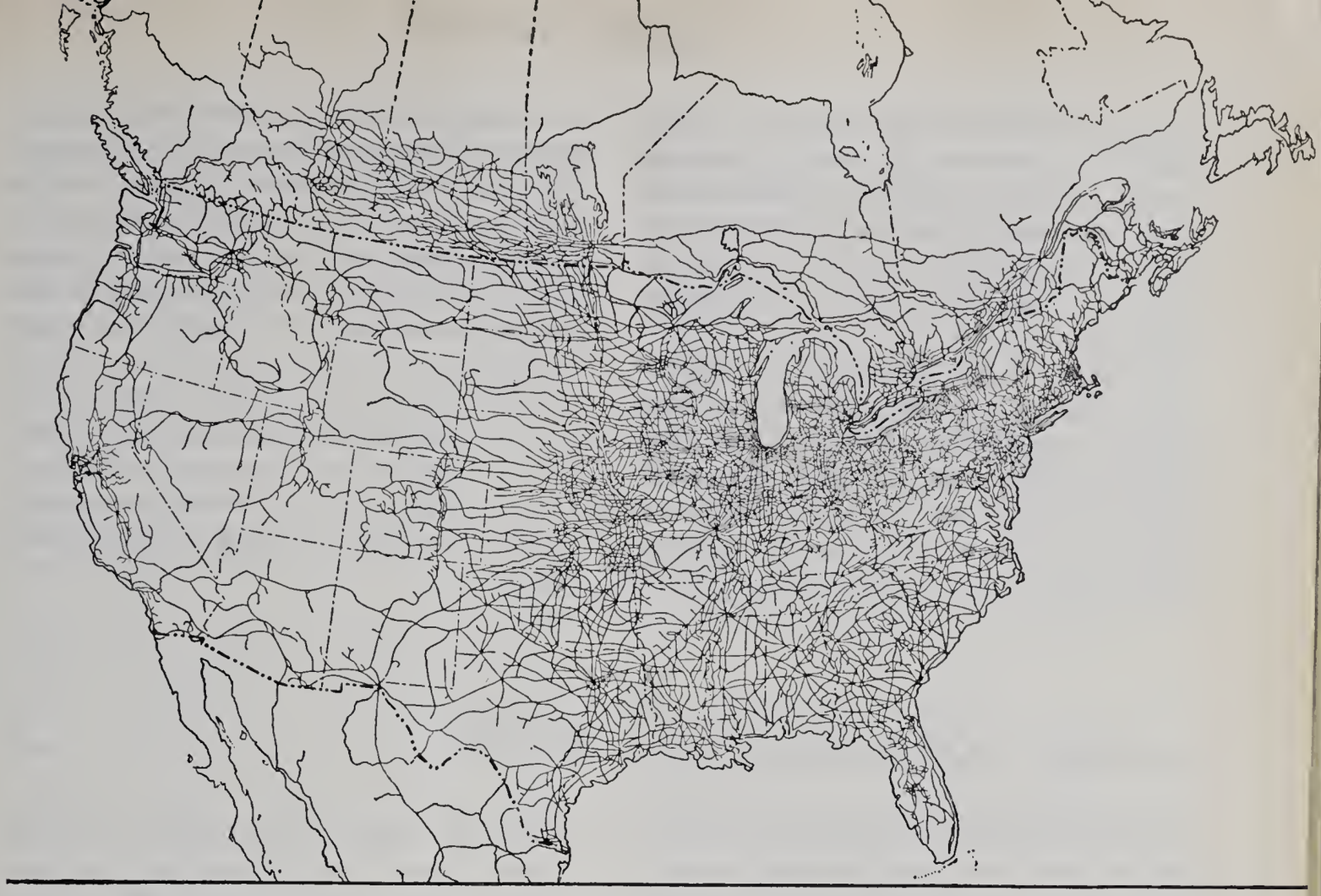
1. The largest fresh-water lake in the world and the longest river in the world are both partly in the Middle West. Which lake shown on the map on pages 102-103 do you think is largest? If you are not sure, lay a thin piece of paper over the one you think is largest. Trace its shore line on the paper and cut out the shape you have traced. Lay it over each of the other lakes. You will then be able to judge easily which is largest.

2. To find the greatest length of a river, you do not always measure all the way along the main stream. You can measure from the mouth of the main river to the *source*, or beginning, of its longest *tributary*. Find on the map the point at which the Missouri River flows into the Mississippi. Which is longer above this point, the upper Mississippi or the Missouri?

Ore boats on the Detroit River. The boats are empty. They are on their way to Lake Superior to get loads of ore. Windsor is on the left bank of the river and Detroit is on the right bank.

Acme





A railway map of Canada and the United States.

3. Although the Middle West has no seacoast, travel by water has been very important to this section. It has thousands of miles of navigable waterways. A river or lake is said to be navigable when it can be used by boats that carry passengers or freight. Navigable waterways are so important to the Middle West that you need to remember the names and locations of some of them. You probably know many of them now. Test your knowledge by closing your book and printing on an outline map the name of each of the Great Lakes and of the Mississippi, Ohio, Illinois, and Missouri rivers.

THE SURFACE OF THE LAND

A large part of the Middle West has a special name. It is called the Central Lowland. You may be surprised to find this region called a lowland, for it is higher than other lowlands that you have seen. What does the map on pages 102-103 tell you about the altitude of the central part of the Middle West? How does it compare in height with the coastal plain? the Piedmont? How does its height compare with the lands to the east, north, and west of it? As you see, this area is surrounded by higher lands except for a strip along the Mississippi, where the coastal plain extends far to the north.

WHERE PEOPLE LIVE IN THE MIDDLE WEST

Turn back to the population map on pages 14-15 and notice that there are great differences in the density of the population in different parts of the Middle West. Make a list of questions you would like to have answered about these differences. You can answer a few from other maps. As you read, watch for the answers to others. The following suggestions will help you:

1. Which part of this section has the most people? Do many of them live in cities?

Do the rainfall and growing-season maps suggest any reasons why many people can live there? What kinds of vegetation did the pioneer settlers find? Do the people there have good transportation? Is it easy for them to trade with other parts of the country?

2. West of the Mississippi is another region with a fairly dense population. There the dots are spread evenly over the map. What does this tell you about the people who live in the region? Do the maps suggest any reason why there should be fewer cities there? Look at all the maps to see what differences you can find between this region and the one east of the Mississippi. Do any of these differences suggest a reason why there are fewer cities? You should be able to explain why the maps do or do not give you a reason. Remember that you cannot always understand a region from maps alone.

3. In the far north and west of the section called the Middle West, the population is very sparse. From the maps you should be able to give at least one reason why few people live in each of these two regions.

A GREAT FOOD-PRODUCING REGION

All the densely populated parts of the Middle West are good farming country, though they are not always good for the same crops. The most densely populated regions of all have many city people, but they have many farmers as well.

AT THE MOUTH OF THE OHIO—WHERE MIDDLE WEST AND SOUTH MERGE

Along the Mississippi, the Gulf coastal plain reaches as far north as the mouth of the Ohio River. If you travelled up the Mississippi River into this region, you would think that you were still in the South, both because of the appearance of the country and because of the crops grown. Cotton is the most important crop, and Kentucky is second only to North Carolina in the amount of tobacco it grows. The farmers there raise corn and vegetables as well.

On this lowland the farmers have a serious problem. The land is fertile and produces big crops, but there is always danger of floods in the spring. Turn again to the map on pages 102-103. Trace the big rivers upstream from this lowland. First, trace the Mississippi River to its source. Start up the Mississippi again, but this time follow the Missouri River. You will have to go on and on and on. Now go back to the Ohio River and trace it upstream to Pittsburgh. Water from all these rivers, and from many more, flows into the lowland near the mouth of the Ohio. Sometimes so much water comes down these rivers that the lower Mississippi River cannot carry the water away fast enough and it spreads out over the land. Levees, or banks, have been built along the shores of the river to hold back the water, but sometimes these are not high or strong enough.

The water floods the towns as well as the country, and in bad years sometimes causes much suffering and damage.

NORTH OF THE OHIO RIVER

To find the regions that we are going to study next, turn to the vegetation map. You see that the great region of broadleaf forest ends at the western boundary of Indiana. The edge of the forest region does not follow the boundary exactly, but it comes very close to it. We are going to study the part of the region that is in Ohio and Indiana.

Suppose we find out something about the climate first. The rainfall map tells you that most of this land is in the 20 to 40 inch rainfall region. The average rainfall is really nearer 40 inches than 20 inches. There is enough rain for almost any crop a farmer may wish to grow. From the growing-season map you see that, though the growing season is not long enough for the special crops of the South, it is long enough for most of the great food crops of the world.

Eastern Ohio is very much like western Pennsylvania. The land is hilly, and many of the slopes are too steep to be ploughed and planted in crops. The farmers of eastern Ohio use the rough, hilly land as pasture for sheep. More sheep are raised in this region than in any other part of the Middle West. Sheep can climb the steep slopes more easily than cattle, but much of the land is not too rough for cattle. Many farmers keep fine herds of dairy cattle. Fruit trees are grown there.

West of the hilly region is general farming country. There every farmer grows food crops for his animals, some fruit, and some vegetables. He also keeps some dairy cattle, a few sheep, some hogs, a flock of hens, and probably some beef cattle, too. The farmers make most of their money by selling their meat animals and animal products — milk, wool, and eggs — but some wheat is grown for sale. Vegetables, especially tomatoes and onions, are also grown as cash crops. This type of farming is much like that of the lowland region in Ontario and Quebec.

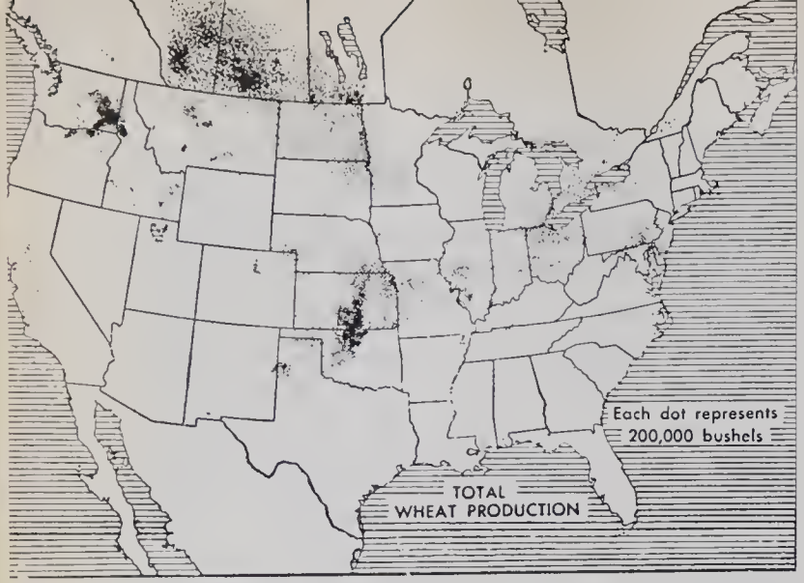
THE CORN BELT

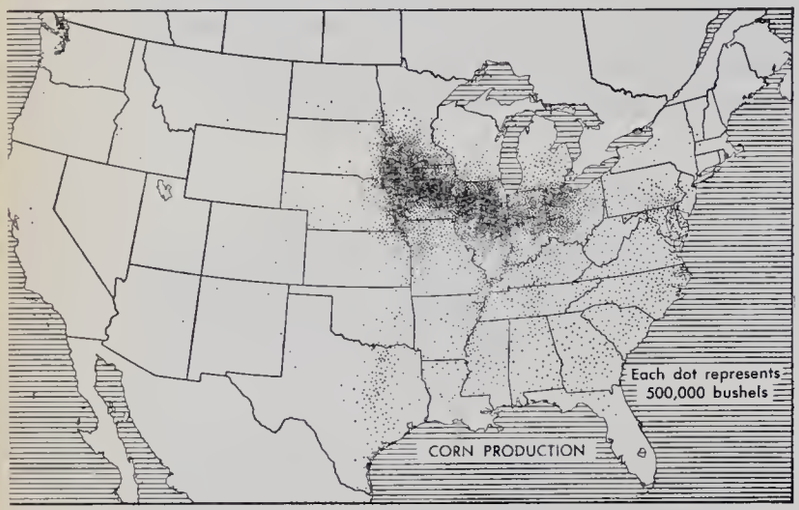
As you can see from the corn map of the United States, corn will grow in many types of climate, although it does not grow in

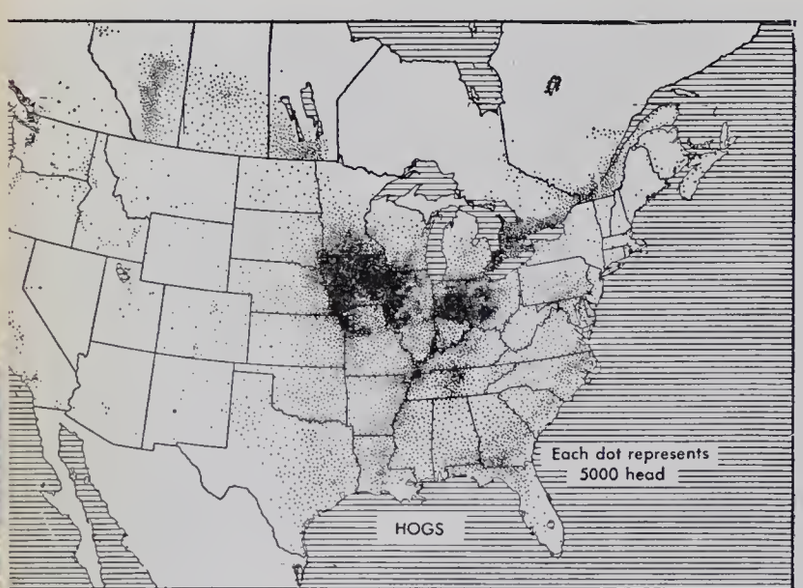
You are looking down from an airplane at hilly land in Wisconsin. The farmer who owns the land has planted his crops in strips around the curve of the hills to prevent erosion.

Upper Mississippi Valley Gov't Conservation Experiment Station









the northern parts of the country or in the drier west. Because corn is excellent for fattening animals of all sorts you will find corn fields wherever farmers raise animals. Human beings eat certain kinds of corn, of course, but most of the corn grown is used to feed animals. There are certain places where corn grows taller, better, and more abundantly. The corn belt in the United States stretches across the Middle West.

Why does corn grow so well in this region?

Corn does not need a very long growing season, as you can see from your map, but it does need lots of hot weather. In the corn belt, the summer days are just as hot as they are in the South. North of the corn belt there are too many cool days for corn to grow successfully.

Corn plants are big, and they grow fast; they cannot grow well without plenty of moisture in the soil. The whole corn belt is in the region that has 20 to 40 inches of rain. Actually the corn belt does not reach all the way to the 20-inch line. If your map had a 30-inch line you would see that that was where the corn belt stopped. Farmers who grow corn farther west are taking a chance. In wet years they get a good crop, but in dry years they get a poor crop or none at all. If there is more than 40 inches of rain, the plants do not get enough sun.

The corn belt is a region that gets many summer thunderstorms. Corn needs plenty of rain, but it also needs much sunshine. Thunderstorms supply the rain without stopping the sunshine for very long. Thunderstorms may spoil picnics and ball games, but they please the corn farmers.

The best corn crops are grown on land that is fairly level. The grasslands of the Middle West are either fairly flat or only gently rolling. There are several reasons why corn needs flat land. Level land is best for machinery, and corn farmers do practically everything by machine. There are machines for ploughing, planting, cultivating, harvesting, and even for husking the corn. Sloping cornfields are in great danger from erosion. The corn plants grow fairly far apart, and there is nothing to stop water from carrying the good soil down the slope. Perhaps you never thought of level land as a natural resource. It does not make exciting scenery, but it does make good farming country, and it does cut down the cost of building roads and railways.

Cold winters also help to produce good corn crops. Nobody knows why this is so. For this reason the best corn is not grown too far south.

Into the grass region. Now we are going to look at the eastern part of the grassland. It begins, you remember, at about the western boundary of Indiana. We cannot show you a photograph of the vegetation as it used to be, because such vegetation no longer exists. Most of this land has now been ploughed and planted in crops, and even in the pasture land the grass does not grow very tall because the animals eat it before it gets very high. Travellers who saw it long ago said that in many places the grass was higher than a man's head.

The grass that grows there now is corn. Yes, corn is a kind of grass. The corn belt starts in central Ohio, but the grassland is the heart of the corn belt.

We can divide the grassland part of the corn belt into two parts; one is east of the Mississippi River and the other is west of the Mississippi. We shall call the part east of the Mississippi, Illinois, although it does not cover all of Illinois; we mean only the part that was once grassland and is now corn belt. We shall speak of the part west of the Mississippi as Iowa, though it covers more than Iowa.

In Illinois you can see for miles. The land is quite level and there are not many patches of woods to block the view. More of the land is ploughed and planted there than in the regions to the east or to the west, because the farmers do not raise as many animals, and so do not need to use as much land for pasture and hay. Corn is much the most important crop.

West of the Mississippi, the land is not as level; most of the surface is rolling. Corn is still the most important crop, but the farmers grow other crops as well; and they keep a great many beef cattle, and so they need pasture land and hay. Iowa farmers also keep many dairy cows, especially in the northeast corner of the state.

Because corn is a good food with which to fatten pigs, more hogs are raised in Iowa than in any other part of the country. The hog belt and the corn belt cover much the same territory. Quite a number of pigs are

Corn plants look like this when they are a few weeks old. The farmer is cultivating the corn. The cultivator loosens the soil between the rows of corn.

Courtesy J. I. Case Co.



raised in the corn regions of Ohio and Indiana as well. Iowa farmers raise more chickens and have more eggs to sell than the farmers of any other region.

The population map will help you to understand the reasons for the difference between the two parts of the grassland. In Illinois you see one thick cluster of dots after another. Some of these cities are very large. Now see what a different population pattern Iowa has. The population is fairly dense, but the fact that the dots are spread evenly over the map means that the population is rural.

Iowa has more animals than Illinois because it has not so many industrial cities. Corn is the biggest crop in Illinois, just as it is in Iowa, but the Illinois farmers sell much of their corn to industrial plants that make cornstarch, corn oil, corn syrup, and other corn products.

Iowa farmers have not such a good market for their corn crops. They keep their corn at home and feed it to hogs, cattle, and chickens. The Iowa farmer can ship his animals to market and make a profit, although it would hardly pay him to ship the corn that far. Sometimes animals raised in other parts of the country are sent to Iowa to be fattened on the corn. The picture on page 155 shows cattle being fattened.

DAIRY FARMS IN THE MIDDLE WEST

There are dairy cattle almost everywhere in the Middle West. Nearly every farmer keeps a few cattle because their milk brings in money the year round, and because the hardest work involved in caring for them comes during the winter, when the farmer has not as much other work to do around the farm.

The Middle West has one specialized dairy region. It is centred in Wisconsin. Turn to the population map and you will see that the dairy region is near the area of dense population that surrounds Chicago. The dairy region supplies the people in the cities with most of their milk, butter, and cheese.

The dairy region is a good place for dairy farms. The weather is cool enough so that the grass stays lush and green during the summer instead of turning brown as it often does farther south, and there are good markets nearby for dairy products.

FRUIT IN THE MIDDLE WEST

When we studied the East and the South we found that very often fruit trees and bushes were grown on the slopes in highland regions. The same thing is true of the Middle West. If you look at the fruit map, you will see that fruit is grown, as we have already mentioned, along the western slopes of the Appalachian Mountains and in the Ozarks.

But the most important fruit regions in this section of the country are along the shores of the Great Lakes. You remember the Niagara fruit belt in Canada and the effect that the lake had upon it. The Great Lakes perform the same service for the fruit regions on the United States side of the border. Fruit grows all along the southern shore of Lake Ontario and Lake Erie, but the largest fruit region borders Lake Michigan.

FEW PEOPLE IN THE NORTHERN LAKES REGION

Now you are going to need the population map again. Put your finger on the state of Michigan just south of the place where Lake Michigan flows into Lake Huron. You are touching a region of sparse population. Move your finger to the northwest. You are touching regions of sparse population all the way. This region is not a good place for general farming because the soil is very poor.

A few places in the northern lakes region are very busy. The largest iron mines in the country are north of the western end of Lake



Courtesy National Dairy Council

A dairy farm in Wisconsin. You can always recognize a dairy farm by the big barn even if you do not see the cows.

Superior, and there are other iron mines between Lake Superior and Lake Michigan. It is from this region that Hamilton has always received the iron ore for its steel mills, and of course this is the chief source of iron ore for the steel mills of the United States. Most of the towns in the region are at the mines or are ports through which the ore is shipped.

Most of the northern region is wooded, and in many areas pulpwood and lumber are cut. Hunters go there in the fall to hunt deer.

REGIONS OF FEW PEOPLE—THE WHEAT REGIONS

When we come to the western edge of the Middle West, dots on the population map are less dense. If you were to travel across this land, you would see that the farmhouses are far apart and the cities small. This is the wheat region.

There are really two wheat regions — the *winter-wheat* and the *spring-wheat* regions.

Wheat is a cool-climate *cereal*. If the weather is too hot when it is beginning to grow, it will not grow well. To avoid this, winter wheat is planted in the southern wheat region. The seeds are planted in the early fall and they begin to grow before the cold weather comes. During the winter the green, grassy wheat plant may freeze, but the roots stay alive. In early spring, the wheat plants grow up quickly and develop heads of grain while the weather is still cool. By the time the heads are fully grown, the days are hot, dry, and sunny. By then such weather is good for the wheat; it helps to ripen the grain and dry it so that it can be harvested. Kansas is the centre of the winter-wheat region.

The northern wheat lands are called the spring-wheat region. North Dakota is the centre of this region in the United States, but, of course, the Canadian prairies are the great spring-wheat region of the continent.

Wheat is not planted in the spring-wheat region until the spring because the winters are so long and cold that the roots would freeze if they were planted in the fall. Since early summer weather there is usually cool, however, the wheat has time to grow before the weather becomes too hot.

Between the two wheat regions is an area that is not very good for either winter or spring wheat. The winters are a little too cold for winter wheat, and the spring is too hot for spring wheat. That is why your wheat map shows a space between the two wheat regions.

Other products of the land. Wheat is not the only grain grown in the wheat region. Barley, oats, and rye are raised throughout most of the wheat belt, and your maps show you that corn grows in much of the winter-wheat region. Wheat farmers often raise animals, and much of their land is in pasture. Another crop grown in this region is *sorghum*, which will grow with less moisture than most hay crops.

There are several kinds of sorghum. Some are threshed for grain and some are fed to animals instead of hay. Both Kansas and Nebraska have about a fourth as much land in various kinds of sorghums as in wheat.

Most of the flax grown in the United States is raised in the northwest part of the Middle West. As you probably know, linen is made from the fibres of the *flax* plant, but very little of the flax grown in the Middle West is used to make linen. *Linseed oil*, used in nearly all paint, is obtained from the seed. Clover seed and potatoes are other crops of the region.

As you travel farther west the climate becomes drier. There most of the grass is allowed to grow naturally and is used as range land for cattle.

CITY PEOPLE OF THE MIDDLE WEST

So far we have talked mostly about the farmers of the Middle West, although there are really more city people there than farmers. However, the cities could not be there without the farmers. But, on the other hand, the farmers could not live so well without the city people either; they could not grow the same crops or use their land in the same way. It takes both city people and farmers to make the Middle West what it is. You will learn why as you read on.

PEOPLE AND GOODS MUST TRAVEL

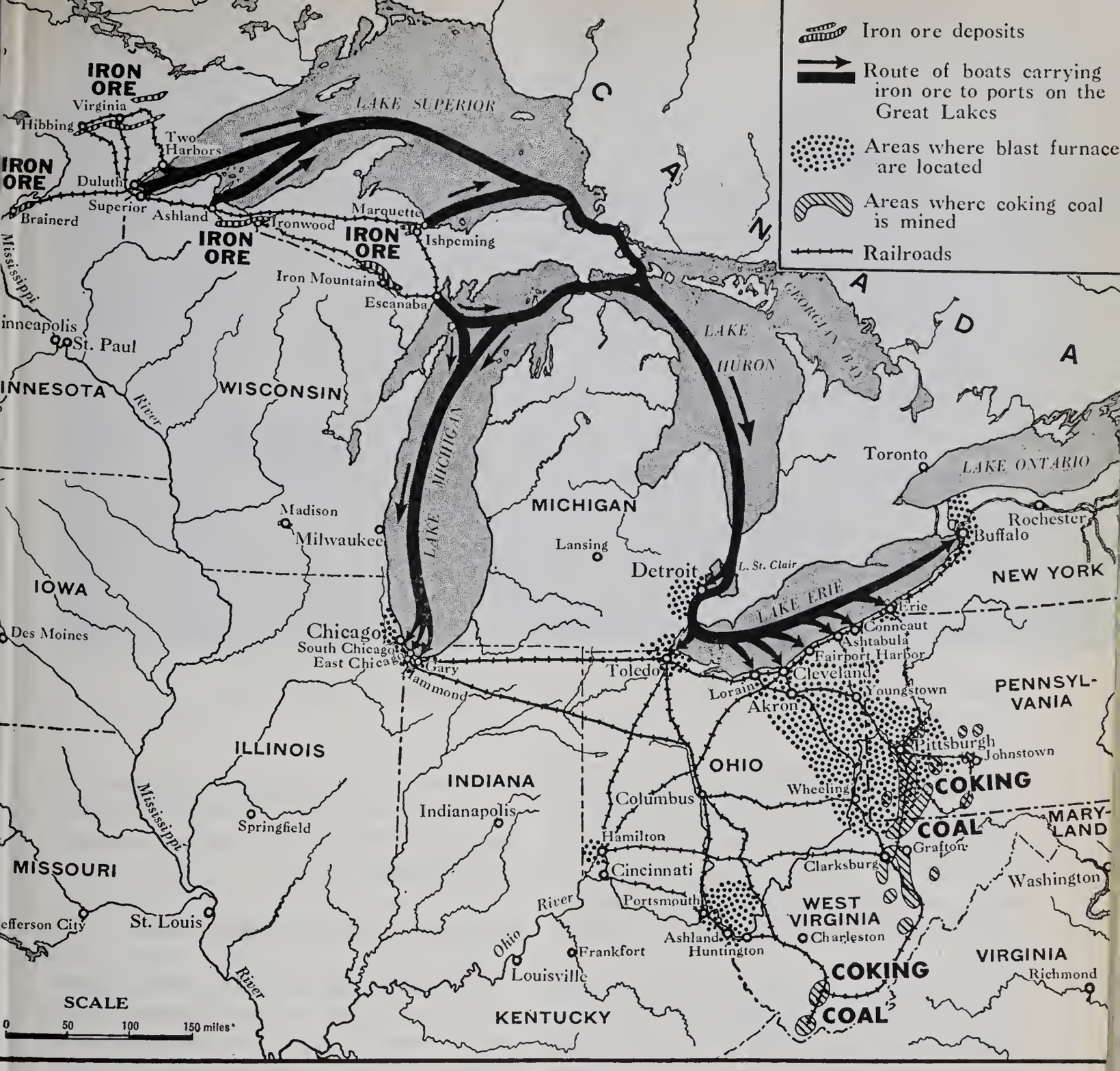
Water transportation. Water transportation has always been important to the Middle West. It still is.

Steamboats were invented while the Middle West was being settled, and for many years they carried people and goods up and down the Ohio, the Mississippi, and the Missouri rivers. This was the only method by which goods could be sent to market and supplies brought from a distance. Now most of the river boats have diesel engines instead of steam engines and they do not usually carry a load; instead they push loaded barges up and down the rivers. The barges carry oil, coal, sand and gravel, big pieces of steel, and other heavy, bulky things.

Rivers are still important transportation routes, but when we think of water transportation in the Middle West, we usually think of the Great Lakes, not of rivers. Without the Great Lakes, the Middle West would be a very different place.

The lake freighters are as large as many ocean ships. The most important cargo they carry is iron ore from the Lake Superior region. The iron ore cannot be smelted where it is mined because there is no coal nearby from which to make *coke*. The ore must be taken to the coal regions. However, some coal is brought by the returning freight boats, and a smelter is located at Duluth. The freighters also carry many other types of cargo.

The eight largest cities of the Middle West are all on navigable waterways.

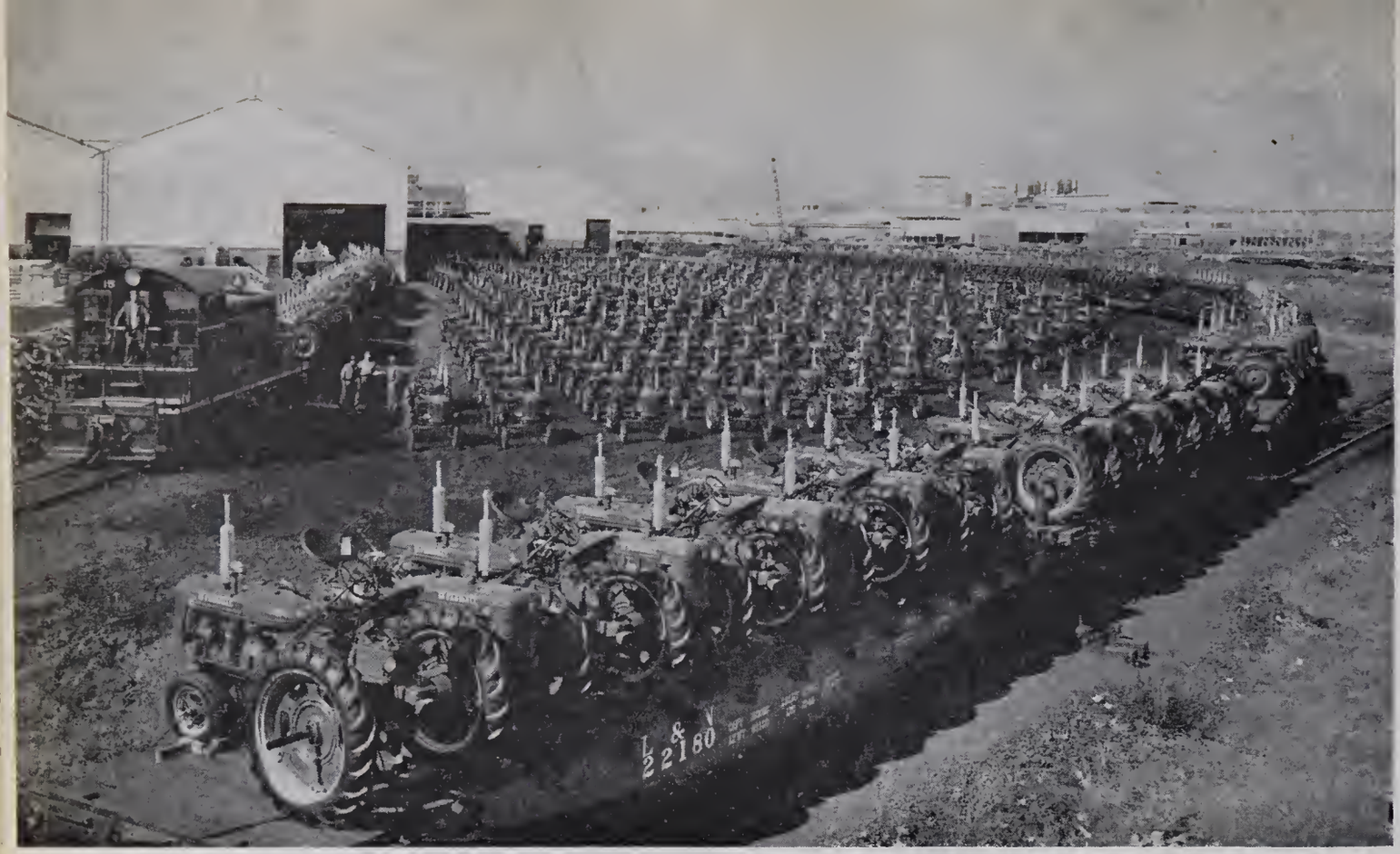


The map shows how iron ore and coal are brought together.

Chicago, Detroit, Cleveland, and Milwaukee are on the Great Lakes waterway. Both St. Louis and Minneapolis are on the Mississippi River. Cincinnati is on the Ohio River, and Kansas City is on the Missouri River.

The steel manufacturing regions are the most densely populated parts of the Middle West. Thousands and thousands of city people live there because of the steel industry and other industries that depend upon steel. But there would probably not be as great a steel industry there without the Great Lakes. Because the iron ore comes from such a great distance, it would cost too much to bring it by land. Only because the iron ore comes cheaply by water can the cities of the Middle West manufacture iron and steel at a reasonable price.

Land transportation. The roads and railways in the East twist and curve. They sometimes have to go hundreds of miles out



Courtesy International Harvester Company

A tractor factory in the Middle West. The tractors are ready to be shipped to the farming districts.

of their way to get through the mountains. The men who built roads and railways in the Middle West did not have such difficulties. Very few slopes there are too steep for trains, and both roads and railways can run for hundreds of miles almost in a straight line.

On page 131 you see a railway map of Canada and the United States. It shows that almost the whole Middle West is covered with a close network of railways. This is not true of any of the other three sections of the eountry — not even of the East, with its many people. Highways in the Middle West are even closer together than railways.

Most of the people of the Middle West livc near good transportation routes. You can see for yourself how the good transportation routes help the farmers; they can ship their products to market easily. If you look at the population map, you will see that at the western edge of the Middle West the population extends westward, not in a solid block but in thin strips. If you compare the population map with the map of the railways, you will see the reason for this population pattern.

IRON AND STEEL IN EASTERN OHIO

Now we are going to talk about regions of city people. You will need the population map. We shall go baek first to a region you already know from your study of the East. Put your finger on Pittsburgh. From western Pennsylvania move your finger to the northwest until you come to Cleveland, on Lake Erie. All the way, your finger touches clusters of dots that stand for eity people. Many of the clusters are so close together that they run together to form one large black spot on the map.

The cities of eastern Ohio belong to the same steel-manufacturing region as Pittsburgh. All the city people there do not work in steel mills, but steel is the principal reason why we have this region of city people.

Go back to page 111 and read about Pittsburgh again. You find that Pittsburgh has steel mills because it is near coal that is good for making coke. Where does the iron ore come from? The map on page 139 shows you far more than we can say in words. You see how ore boats come down the lakes from Lake Superior to Lake Erie. The ore is unloaded in cities along the southern shore of Lake Erie. Much of the ore is taken on trains to Pittsburgh and the cities near it.

Not all of the ore is loaded on trains, though. Much of it stays in Cleveland and other lake ports. These cities have steel mills, too. Their coal comes by train from Pennsylvania and West Virginia. If you were to watch the freight trains in this region, you would see trainloads of iron ore going south and trainloads of coal going north. Iron ore and coal can be unloaded in any city along these railways. Most of these cities have steel mills.

IN THE CHICAGO REGION

At the southern end of Lake Michigan is another steel-making region. It also gets its ore from the mines near Lake Superior, and most of its coal comes by train from southern West Virginia and from Kentucky. There is coal nearby in Illinois and Indiana, but coal from the Appalachian region is better for making coke.

Chicago is the biggest city in the Middle West. Find it on the population map. You cannot find one cluster of dots that stands for Chicago, because the whole region around Chicago is black with dots. If you were to drive north out of Chicago, you would drive through one city after another, with hardly a break between them. Those nearest Chicago are mainly cities of homes. Many of the people who work in Chicago live in these cities. The cities farther away have industries of their own. This region of very dense population goes far into Wisconsin. The whole region is called the



The industrial region of the Middle West.

Chicago industrial area because Chicago is much the most important city in it.

You know what the Great Lakes mean to the Chicago region. If you look out over Lake Michigan from Chicago, you can see the big ore boats passing up and down the lake. From early spring until late fall you can see them almost any time you look. They do not run in the wintertime because of the ice on the lakes and rivers.

Iron ore is not all that the lake boats bring to Chicago. They bring coal from Lake Erie, wheat from the spring-wheat region, and paper from Canada. A few ships come all the way from Europe to Chicago and other lake ports. They cross the Atlantic Ocean and then travel up the St. Lawrence River to Lake Erie. Between Lake Ontario and Lake Erie they go through the Welland Canal.

Chicago has other water transportation. A canal connects Lake Michigan with the Illinois River. It is very busy.

The map on page 131 shows many railways coming to Chicago. This map shows only the main lines; there are many others. More railways meet in Chicago than in any other city in the world.

Chicago is a great air centre, as well. At the Chicago airport, twelve airlines meet.



Acme

Truckloads of fat hogs being taken to the city stockyards.

Passenger planes arrive and leave at the rate of two every five minutes. You can fly from Chicago to any other big city in the United States and to some cities in Canada by direct route. You can also leave Chicago on a plane bound for Europe or South America.

The meat-packing business. Farmers from all over the Middle West ship their animals to the Chicago *stockyards.* They may send the animals on special cars on the railway, or they may take the animals to Chicago in their own trucks. So many animals are sent to Chicago that meat packing is its second-largest business. The steel industry comes first.

The meat-packing companies do three things for the people of the Middle West. They are a market for the farmer's meat animals; they provide work for thousands of city people; and they supply most of the meat that the people in the eastern part of the Middle West eat. They also supply much of the meat used farther east and south.

Chicago is not the only city in the Middle West that has stockyards and meat-packing plants, but because of the excellent transportation, it is the largest and most important meat-packing centre. Farmers everywhere in the corn belt can ship their animals to Chicago quickly and easily.

Other business in the Chicago region. Steel and meat-packing are not the only industries in Chicago. Many farm products besides meat are shipped to this region. A large manufacturing plant just outside Chicago makes cornstarch and other products made from corn. That manufacturing plant is one of the reasons why there are fewer hogs in Illinois than there are in Indiana and Iowa.

A great many industries in the Chicago region depend upon the steel mills for their raw materials; one is the farm machinery industry. It also depends upon the farmers for its market. More farm machinery is manufactured in the region around Chicago than in any other region of similar size in the world.

Factory machines and tools are made in the Chicago region, too. Almost anything you can think of that is made of steel is made somewhere in this region. However, automobiles are not made there, though automobile parts are.

THE AUTOMOBILE REGION—DETROIT

Turn back to the population map and find the river that flows between Lake Huron and Lake Erie. Detroit is the centre of the large cluster of dots along the river. The dark area includes a number of cities. Farther west there are other clusters of dots. All these cities form the automobile-manufacturing region of the United States. Most of the automobiles made in the United States are made there.

Detroit has big steel mills of its own, but the automobile factories also use steel made in the steel plants on the shores of Lake

Michigan and Lake Erie. Many different materials are used in making an automobile, but there is more steel used than anything else.

Automobiles are not the only things that are made in the automobile region. A great many automobile parts are made in factories that do not build whole automobiles. Many other articles are made there, too. Grand Rapids, for example, is a furniture-manufacturing city. Holland, near Grand Rapids, has a big plant that makes furnaces and stoves. Its products are sold all over the country. Battle Creek has factories that manufacture breakfast food. South Bend has factories that make washing machines and other household appliances. Band instruments are manufactured in Elkhart, a small city east of South Bend. Toledo has big plants that make glass, in addition to an automobile factory and several other factories that make automobile parts.

More automobiles are made in Detroit than are made in any other city in the world, but Detroit also has factories that make a great many other articles, from medicines to television sets.

CITY PEOPLE WEST OF THE MISSISSIPPI RIVER

At the western end of Lake Superior are the lake ports of Duluth and Superior. They have factories, but their main business is shipping iron ore and grain. Large iron mines are found in this small region of northern Minnesota.



Kaufmann & Fabry Company

Harvesting sorghum in Kansas. There are several varieties of sorghums that are used for feed.

Far to the south, the cities of southern Kansas have a special reason for existing. The oil region you read about on pages 125-126 extends into southern Kansas. Cities there have oil refineries, and some have factories that make equipment for oil wells.

All the cities along the eastern edge of the wheat region have one thing in common; they are market towns for wheat. In the Middle West nearly all food crops are

A wheat field in North Dakota. The machine cuts and threshes the grain in one operation.

Courtesy Northern Pacific Railway Company



shipped toward the east, to the regions of dense population. This is especially true of the western part of the Middle West, which has no densely populated regions of its own.

From the northern wheat region millions of bushels of wheat go to Duluth, where it is loaded onto big boats that carry it down the lakes to flour-milling cities. More grain goes to Buffalo than to any other lake port. Most of the flour that is ground in Buffalo is shipped still farther east, to bakers in the densely populated region.

Not all the wheat goes to lake ports to be shipped by water. Millions of bushels are shipped by freight train to Minneapolis, Omaha, Kansas City, Wichita, and other cities at the edge of the wheat region. From there, flour is shipped to the densely populated region farther east. Most of these cities have meat-packing plants as well as flour mills.

THE GEOGRAPHY WORKSHOP

I. STUDYING CITIES IN THE MIDDLE WEST

Your class might divide itself into groups, or committees, for studying the Middle West in your own home. There is too much work for any one boy or girl to do alone. Besides, it is more fun to work with other people. When you and your committee have done your part of the work, report to the class. Making a good report is just as important as any other part of the work.

Turn back to page 139 and find the names of the eight largest cities in the Middle West. Name a committee for each city.

Suppose, for example, your committee is going to study Chicago. First find the direction of Chicago from your home. When you report to the class, you should be able to name the direction. You should also be able to point toward Chicago. If you have a wall map of North America, show the class the direction of Chicago from your home on the map. Do not just point to the location of your home and then to the location of Chicago. Move your finger across the map in a straight line from your home to Chicago. Tell the class about how far away Chicago is.

Find out what route you would have to follow to go to Chicago if you travelled by road. What route would you follow if you went by railway? by air? Could you go by water? Draw the routes in color on an outline map to show to the class. You can find the routes from road maps and railway, air, and bus timetables. Do these routes differ much from the great-circle route?

Try to find pictures of the city you are working on. What are its most important buildings? What industries has it? Why has it these industries? The encyclopaedia and your textbook will probably help you to answer these questions.

II. THINGS TO FIND OUT ABOUT THE MIDDLE WEST

1. Find out from the maps what state in the Middle West is nearest to your home. How far away is it?

2. Use the maps to compare the Middle West with your home. What part of the Middle West is the most like your home in climate? Perhaps you may not find any part of it that has a climate like the climate of your home region.

Compare natural vegetation, population, and products, too. Get your information from maps and from what you have read.

Study the pictures in this section to see whether you can find one that might have been taken in your part of the country.



THE UNITED STATES—THE WEST

Have you seen any stagecoach robberies lately? We mean in the movies, of course. Nearly everybody likes western movies. Some people think that the West still looks as it does in the movies. Some of them even think that the whole United States is like the country that is shown in the cowboy movies.

It is all right for you to see western movies and enjoy them, as long as you do not believe all you see. People write the movie stories to entertain you, not to teach you about a part of the country. However, the western movies do tell us many true things about the West, even though they are made-up stories. They tell us about the scenery. They show us western cattle and sheep and horses. They show us how some cowboys dress and the kind of saddles they use. They tell us that much of the West is a dry land. They show us beautiful mountains, forests, deep *canyons*, deserts, and wide grass-covered plains. We can learn a great many true things about the West from western movies.

The next time you go to a western movie look for the kind of scenery you read about in this chapter. What part of the West do you not find shown in western movies?

WHAT WE CAN LEARN FROM MAPS

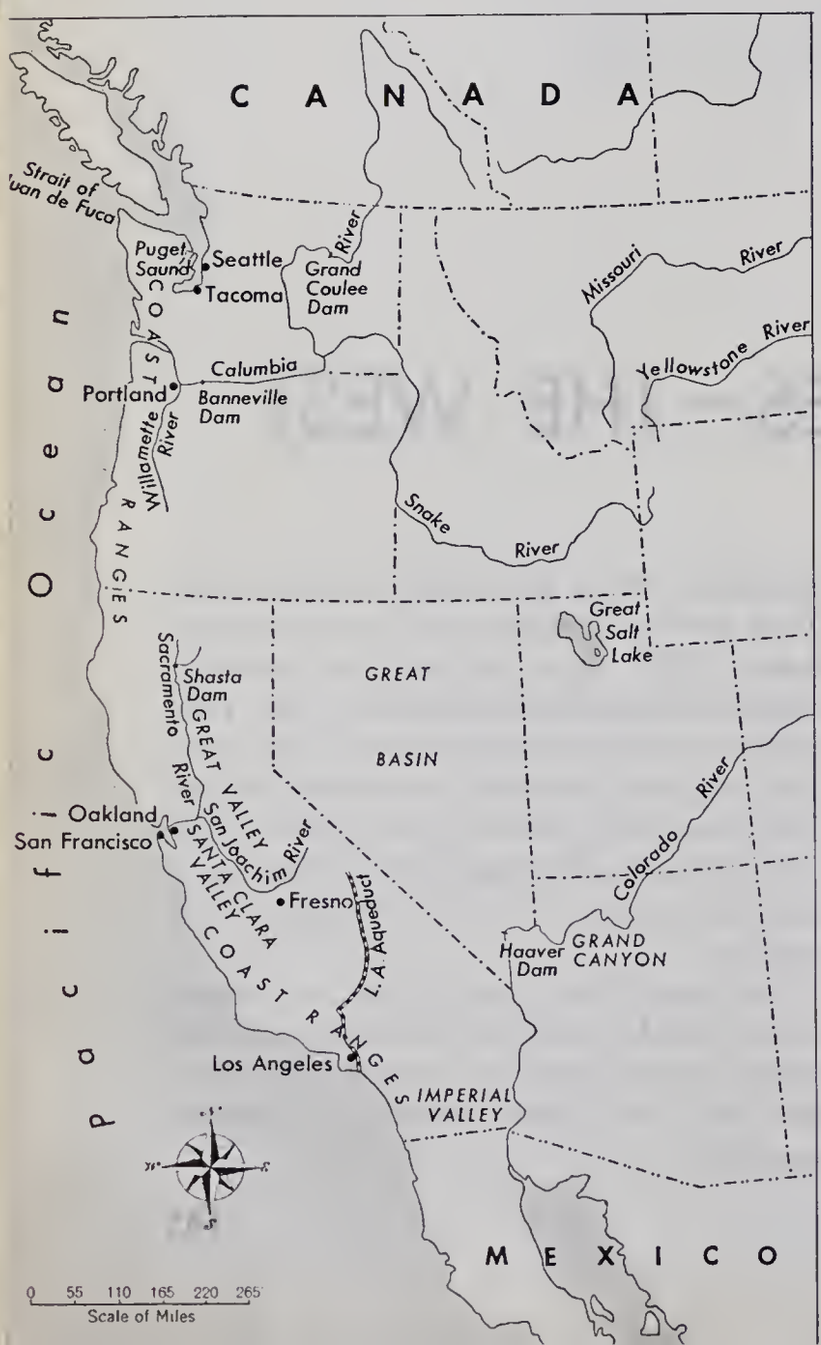
The section of the United States that is called the West extends from the Middle West and the South to the Pacific coast. In the West there are eleven states. You can find them on your map easily because they are the only ones left that you have not studied.

GETTING ACQUAINTED WITH THE WEST

1. On the map on pages 102-103 look at the western states until you think you know the shape and location of each one. Then close your book and print the names in the correct places on an outline map of the United States.

2. On the whole, the West is a dry land, but it has a few rivers and one lake that you will probably wish to remember. The Rio Grande and Missouri you have met before. Besides these, you will need to know at least the Columbia, Snake, and Colorado rivers as well. You will also need to know the location of the Great Salt Lake. Make sure that you know all of them well enough to find them easily. Then test your knowledge by printing the names on an outline map with your book closed.

A map of the United States West.



THE GREAT HIGHLANDS

The eastern and western halves of the United States differ in population, climate, and vegetation. Many of these differences are a result of differences in surface and *elevation*. Elevation is another word for altitude, or height above sea level.

1. Turn back to the map on pages 102-103. There you see that most of the eastern half of the United States is colored in two shades of green, with a fairly large area of yellow. In the western half of the United States, nearly all the land is shown in brown. A very large area is in the darker shade of brown. What does the map tell you about elevation in the West?

2. You will need to learn the names and locations of four great groups of mountains. One group has a Spanish name. You should remember that "sierra" is the Spanish word for "mountain range." You may like to know that "nevada" is the word for "snowy."

The Sierras are the highest mountains in the United States, although, as you can see, they are not so large in area as the other groups. The mountains in this group stand in one long range; that is, there is one row of mountains. The other groups are made up of a number of ranges. Notice how

many separate ridges, or ranges there are in the Rocky Mountains. A group of mountain ranges such as this is called a *mountain system.*

RIVERS AND THE CONTINENTAL DIVIDE

You know that the Missouri flows southeastward into the Mississippi, which empties into the Gulf of Mexico, a part of the Atlantic Ocean. Follow the Missouri upstream to its source. Now find the Rio Grande. You know that it, too, flows into the Gulf of Mexico. Follow it upstream to its source. The rivers between are tributaries of the Rio Grande or flow toward the east into the Missouri or Mississippi. Where are their sources? Where does the water of all these rivers finally go?

Now find the Columbia River and the Colorado River. Follow these rivers and their tributaries upstream to their sources. Where do these rivers begin? In general, which way do they flow? Which ocean do their waters finally reach?

As you see, the rivers that have their sources in the eastern part of the Rocky Mountain system finally flow into the Gulf of Mexico. The long rivers that have their sources in the western part of the Rocky Mountain system finally flow into the Pacific Ocean. In other words, the waters that fall on the eastern side of the Rocky Mountains finally reach the ocean on the opposite side of the continent from the waters that fall on the western side.

If you have an outline map that shows rivers, you can draw a line between the rivers that flow east and the rivers that flow west. It will be a very crooked line, because the rivers seem to be interlaced near their sources. It would be even more crooked if your map showed every tiny tributary. You have drawn your line along the *continental divide.* Read again about the continental divide in Canada, on page 88. What did we call it there?

There are many other *divides* in the United States. You may draw some of them on your map if you wish. Use lighter lines

This scene was taken in the Great Basin. The mountains in the background are the Sierras. Notice how dry the land seems.

Ewing Galloway



than you used to show the continental divide. A divide separates the *drainage basin* of one river from the drainage basin of the next river.

THE GREAT BASIN

West of the Rocky Mountains, you see the Columbia River and its tributaries flowing toward the Pacific. Far to the south, the Colorado River and its tributaries empty into the Gulf of California, which is also part of the Pacific Ocean. West of the Sierra Nevada and the Cascade Range are shorter rivers that flow into the Pacific.

East of the Sierra Nevada, however, is a region from which the rivers do not flow into the Pacific. They do not flow into any ocean. Turn to the map on page 147 and find the region called the Great Basin. It is called that because it is lower than the land around it. You may think of it as a land of lost rivers. They flow into the *basin* and become smaller and smaller until they disappear.

If you turn back to the rainfall map on pages 8-9, you will see that nearly all the Great Basin has less than 10 inches of rain in a year. Rivers would probably not be lost in the Great Basin if there were more rain there.

RAINFALL AND POPULATION

Except in the higher mountains, most of the West has less than 20 inches of rain in a year, and much of it has less than 10 inches. As you know, not much farming can be done with less than 10 inches of rain, except where the land can be irrigated. Land that is too dry for farming is called *arid*. Deserts are arid, but the word may be used also for land that is not quite dry enough to be called a desert. For example, you will sometimes read about arid grasslands.

Now turn to the population map on page 112. On this map you see that the western half of the country looks very different from the eastern half. Most of the map is almost empty, with the dots clustered thickly in a few areas. In the eastern half of the country, such clusters of dots usually mean an industrial area, with several large cities. In the West they may mean something else. Can you guess what it is? In the pages that follow, you will find out whether your guess was right or wrong.

MANY PEOPLE NEAR THE PACIFIC COAST

From your map studies, you know that most of the West is highland, and that in the whole region, the only lowlands are near the Pacific coast. The lowlands are not large, but the regions of dense population are in them.

The Pacific lowlands are not all alike. The one farthest north crosses the boundary into Canada. The one farthest south crosses the boundary into Mexico. Between these two boundaries there are more than sixteen degrees of latitude; they are as far apart as Maine and Florida. You can see that we could not very well study them all at once.

COAST LANDS OF THE NORTHWEST

Suppose we start at the north. In Washington and Oregon, we find a long, narrow region of very dense population, where most of the people of these states live. As you read about the people and their land, use the map on pages 102-103. With it, study the map on page 146.

Most of the people in the lowland can see high, snow-covered mountains to the east of them. West of the lowland are the Coast Ranges. They are not as high in the United States as they are in Canada. Nor



Bureau of Reclamation

An orchard of prune-plum trees. The plums are ripe, and a man is picking them. You can see the boxes of plums on the ground.

are they as high or as rugged as the Cascade Mountains to the east of the lowland. Only a few of the coastal mountains are high enough to have snow the year round, and in places the lowland reaches all the way to the coast.

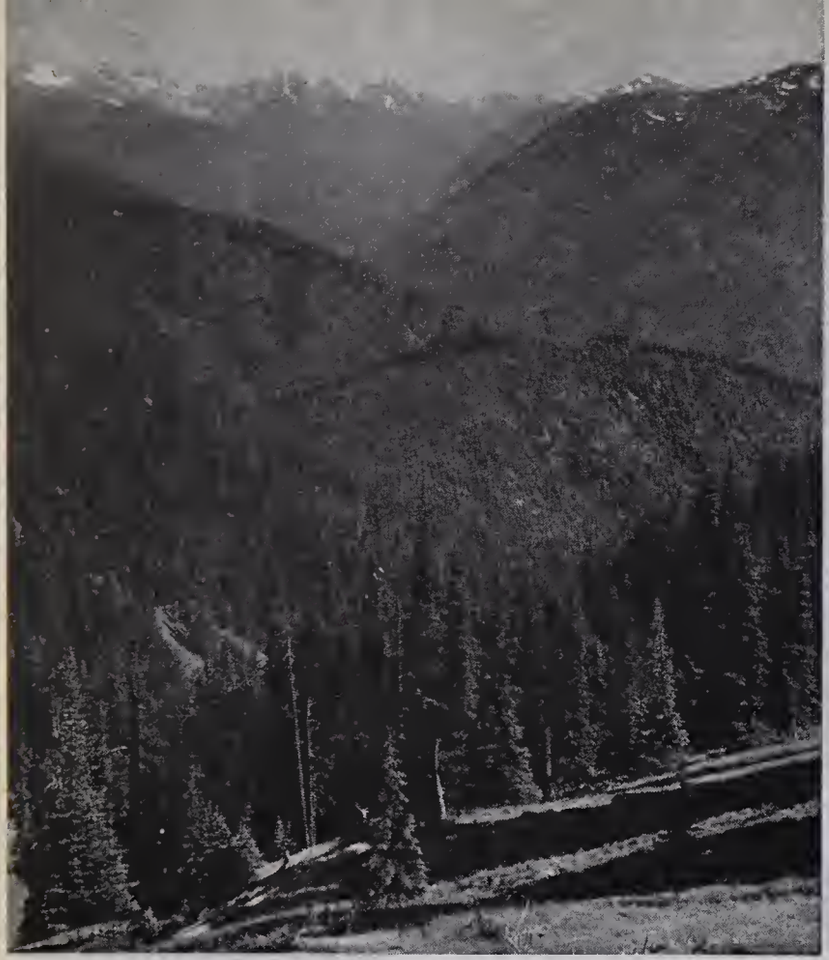
The lowland itself stretches along Puget Sound and the Willamette River. The Columbia River, which rises in Canada, flows into the lowland. Find the source of the Columbia River on the map on page 91.

A surprising climate. Unless you know this coastal region well, you may be surprised at the climate. Look at the growing-season map. The high mountains have a cold climate and a short growing season, as you would expect, but the lowland has a growing season six to eight months long. It is as long as the growing season in North Carolina or Tennessee, which are more than ten degrees farther south.

If you remember what we learned about the climate of British Columbia, you will be able to explain why the climate of the Puget Sound-Willamette River lowland is so mild.

Farmers in the lowland. More than anything else, it is the rain that makes these coast lands different from the rest of the West. Look at the rainfall map. You see that the area of dense population is in a region of plentiful rainfall. In the pioneer days, settlers travelled thousands of miles and overcame great difficulties to reach this region. They passed over the fertile but dry land farther east, until they reached a place where they could farm.

This lowland is a region of general farming, but it is not like the general farming regions of the Middle West. If you look at the product maps, you will see that farmers there grow very little wheat and scarcely any corn. They do not raise many hogs or beef cattle. They do keep many dairy cattle, and they use much of their land for apples, peaches, plums, and vegetables.



Courtesy The Milwaukee Road

The Olympic Mountains, west of Puget Sound. Trees cover all but the highest peaks.

Farmers there raise one kind of fruit you have not found in any other region you have studied — prune-plums. Perhaps you can find prunes from Oregon or Washington in your grocery store. You may find them packaged as dry fruit.

The lowland has many more city people than farmers. The city people can get their grain and meat from a distance, because these are easy to ship, but they get their fruit and vegetables from the farmers near-by. The fruit and vegetables that are not sold to the city people are sent to canning factories and freezing plants.

Forest products and forest conservation. Most of the cities of this coastal region started as sawmill cities. Some of the finest cone-bearing trees in the world grow there. It is part of the same region that produces the red cedars and Douglas firs in British Columbia. The trees along the coast of Washington and Oregon grow big and tall and straight. The wood is strong, but easy to work with.

By not cutting all the trees at once, by seeing that young trees are left to grow, and by replacing those that are cut down, by thinning trees that grow too close together, and by fire and pest control, the lumber companies there hope never to run out of lumber. Some of the owners call the forest land, tree farms. They mean that they are growing trees as a crop.

The Northwest produces more lumber than does any other part of the United States. The Northwest also has large paper mills. You remember what is needed for paper mills — wood and water. The northwest has plenty of both.

Water power. The Columbia River supplies most of the hydro-electric power used in this part of the country. The Bonneville Dam and the Grand Coulee Dam were built on the Columbia River. There are dams on some smaller rivers, too.

Electricity from water power runs most of the sawmills and paper mills in the Northwest. It is used in many other industries there too. Some of the factories were built there because of the electricity. Aluminum manufacturers have built plants in the Northwest because of the plentiful supply of electricity. Other manufacturing plants use electric power to make products from aluminum.

Aluminum is not the only metal worked in the Northwest. Tacoma has big smelters for copper, silver, and gold. Seattle has plants that make articles from iron and steel. Some of the furnaces for smelting the metals are heated by electricity.

Cities and seaports. The region west of the Cascades has more city people than farmers. Seattle, Tacoma, and Portland are the largest cities of this region. They are also seaports. Portland may not look like a port on the map, but it is on the Willamette River, near where it flows into the Columbia.

Turn to the railway map on page 131, and find Seattle, Tacoma, and Portland. You see that they are all at the ends of railways that come from the Middle West. They handle imports and exports for the whole country, just as Vancouver and the eastern seaports do.

Of course, products of the Northwest are shipped through these ports as well as goods from the Middle West. Lumber, canned and frozen fruit, fish, aluminum and other metals, and rolls of paper are the usual cargo.

You may have noticed that canned and frozen fish are among the exports of this region. Salmon fishing is important there, just as it is in British Columbia, to the north.



Fruit orchards in southern California. The hills are not farmed because they cannot be irrigated.

VALLEYS AND COAST LANDS IN CALIFORNIA

The Great Valley. In northern California is the Great Valley. Find it on the map on page 146, and then find it on the physical-political map on pages 102-103. It is not the valley of just one river. The Sacramento River, flowing south, and the San Joaquin River, flowing north, meet near the centre of the valley and flow to the Pacific Ocean together.

Mountain ranges almost surround the Great Valley. The Coast Ranges between the Great Valley and the Pacific Ocean are not very high, but they shut the valley off

San Francisco. The Bay Bridge is in the foreground. The Golden Gate Bridge is at the upper right, and the Pacific Ocean is in the background.

Century Photos





Bureau of Reclamation

Grand Coulee Dam. You can get some idea of the size of the dam by comparing it with the buildings.

from the ocean. To the east is the high Sierra Nevada. These two mountain ranges keep out the cold winds from the north and the cool breezes from the ocean. Summers in the valley are so hot that most people do not enjoy them, but winters are short and pleasant. Your growing-season map shows what a long growing season the valley has.

Farming in the Great Valley. The valley is dry. Most of it gets only from 10 to 20 inches of rain in a year, which is not enough for most crops. Yet this valley produces great quantities of fruits and vegetables.

The long growing season allows farmers to grow oranges as far north as the lower Sacramento Valley. This is in the same latitude as Kansas. The San Joaquin Valley is best known for grapes. Did you know that raisins are dried grapes? The region around Fresno supplies most of the raisins for the United States. Where did the raisins in your pantry come from? You cannot make raisins from just any grapes. You must have firm, sweet grapes that are not very juicy, and, in the United States, these grow only near the Pacific coast.

Nearly every kind of fruit grows in the Great Valley. Figs and prunes grow there as well as peaches, plums, pears, cherries, and other cool-climate fruit. Some of the fruit is sold fresh. You can find California fruit in stores in all parts of the United States. Thousands of acres of orchards provide fruit for canning.

Valley farmers also have groves of olives. Many nuts, including almonds and English walnuts, come from there.

Farmers near the mouth of the Sacramento and San Joaquin rivers raise the greatest number of vegetables. This area is very low-lying. Once it was very wet, but the land has now been drained. Farmers in other areas raise cotton.

How do you suppose the farmers raise so many crops when there is so little rain? A lot of rain and snow falls in the Sierras because they are high. In the spring, when the snows melt, the streams are full of water. Almost every stream in this area is dammed before it leaves the mountains. The dams catch the water and hold it back in the deep mountain canyons. Later, it is allowed to flow through irrigation canals to the valley land. The largest dam, Shasta Dam, is at the north, in the Sacramento River.

City people around the Bay. What part of central California has the most people?

Turn back to the population map on page 112 and see.

The surface of the land is not what you might expect in a densely populated region. This region of many people is right in the middle of the Coast Range. However, the Coast Range mountains are not high.

A large body of water stretches north and south between some of the ranges of low mountains. It is called San Francisco Bay. The Bay is connected with the Pacific Ocean by a narrow strait named the Golden Gate.

Without the Golden Gate and the Bay we should not have the region of dense population. People live there for many reasons, but the main reason is that the Bay is one of the finest harbors in the world.

The other cities around the Bay are seaports too, but San Francisco is the business centre of the region. It is the headquarters of many companies that do business in the West.

We have told you that a seaport must have good transportation. In some ways San Francisco might be called an exception to that rule. The city is surrounded by water on three sides, so that railways can reach it only from the south.

Only a few railways cross the whole West. Several reach the coast in the northwest. Several reach the coast in the southwest. These railways lead to cities that are almost a thousand miles apart. Between these cities there is only one place where you can reach the coast by a direct line from the East. That place is San Francisco.

PEOPLE OF SOUTHERN CALIFORNIA

Los Angeles. You have heard about the movie studios in Hollywood. Hollywood is part of Los Angeles. The movie makers chose Los Angeles for their studios because of the scenery and the climate.

Near Los Angeles they could find almost any kind of scenery they wanted. Seashore, mountains, farms, cattle ranches, city streets, grassy hills, forests, desert — all are within a few miles.

Even more important than the scenery is the climate. Los Angeles has many days of sunshine and little rain, which means that the people who make the pictures can nearly always work out-of-doors, even in the winter. Turn to the growing-season map on pages 10-11 and find this region.

Climate and crops. For still other reasons climate has attracted people to the Los Angeles region. Many people have gone there to farm. However, the place is not ideal for farming, because there is not enough water. Almost anything will grow in this region, but very few things will grow there without irrigation.

The first settlers chose Los Angeles as the site for their farms because streams from the mountains flowed into the valley there, and they could easily get water for irrigation. Ever since that time, farmers of the Los Angeles region have irrigated their land.

Los Angeles grew, and a time came when there was not enough water. More farmers wanted to go to the Los Angeles area, but there was not enough water to irrigate more land. To overcome this lack of water the people of Los Angeles built an aqueduct. An *aqueduct* is usually a huge pipe

Water from the Colorado River irrigates this field of lettuce in the Imperial Valley.

Courtesy Caterpillar Tractor Co.



that carries water from one place to another. There is a picture of the aqueduct on page 161. It runs from a river on the eastern side of the Sierras to Los Angeles. On the way the big pipeline tunnels under mountains and crosses a desert.

More farmers came to the Valley, and soon the one aqueduct could not bring enough water, so the people built another one to the Colorado River. The aqueduct to the Colorado River is an open canal most of the way.

The Los Angeles region is densely populated. The people who live there buy many of the vegetables grown on the farms. There are also canning factories and freezing plants to which the farmers take their produce.

When people in other parts of the country think of farming near Los Angeles, they usually think of oranges. Maybe they think of lemons and grapefruit too. But farmers there grow other *warm-climate fruits,* such as avacados, figs, olives, persimmons, and pomegranates. They grow nuts too: almonds, English walnuts, pistachios, and macadamia nuts.

Besides these warm-climate fruits and nuts, they grow apricots, peaches, pears, cherries, plums, apples, and grapes. Farmers raise strawberries and all the small berries that grow on bushes. They also raise melons. In fact, they grow almost every kind of fruit you could think of.

Transportation was a problem. There is no way for railways to reach Los Angeles except by following passes through the mountains. These passes are narrow, crooked valleys, and it is difficult and expensive to build railways through them. Automobiles can climb steeper slopes than trains, but they cannot go straight up the side of a mountain, so the highways too follow the passes.

As Los Angeles grew, the people found that they needed a seaport. The city was near the mountains, miles from the ocean. Along the coast near Los Angeles, there was no good natural harbor. If the people of Los Angeles wanted a harbor, they would have to make it themselves, and that is just what they did. Los Angeles has an artificial harbor.

The cowboys are roping a calf so that they can brand him. They heat the branding iron in the fire in the foreground.

Wyoming Travel Commission, Cheyenne



Why industries came. Los Angeles lacks many natural resources, but the people have made up for them. There was no harbor, so they made one; there were no easy land routes to the city, but the people built railways and highways over difficult routes; there was not enough rain for farming, so they brought water from afar.

However the Los Angeles region does possess some valuable natural resources. It has oil. Oil brings business to the harbor. Oil-burning ships put into port there to fill their tanks with fuel. Tankers come to carry away cargoes of oil and oil products. Oil refineries in the region process oil, and factories make machines and equipment for oil wells.

The Los Angeles region has no coal to burn for power. Coal must be brought a long way by train or ship. Streams near Los Angeles furnish water power, but not enough. For a long time power was a problem.



Allen from Century Photos

Beef cattle from the West being fattened in the Middle West.

Turn to the map on page 146 and find the Colorado River east of Los Angeles. Follow the river upstream until you come to the words Hoover Dam. There the United States government built a great dam and power plant. Los Angeles gets most of its electricity from Hoover Dam.

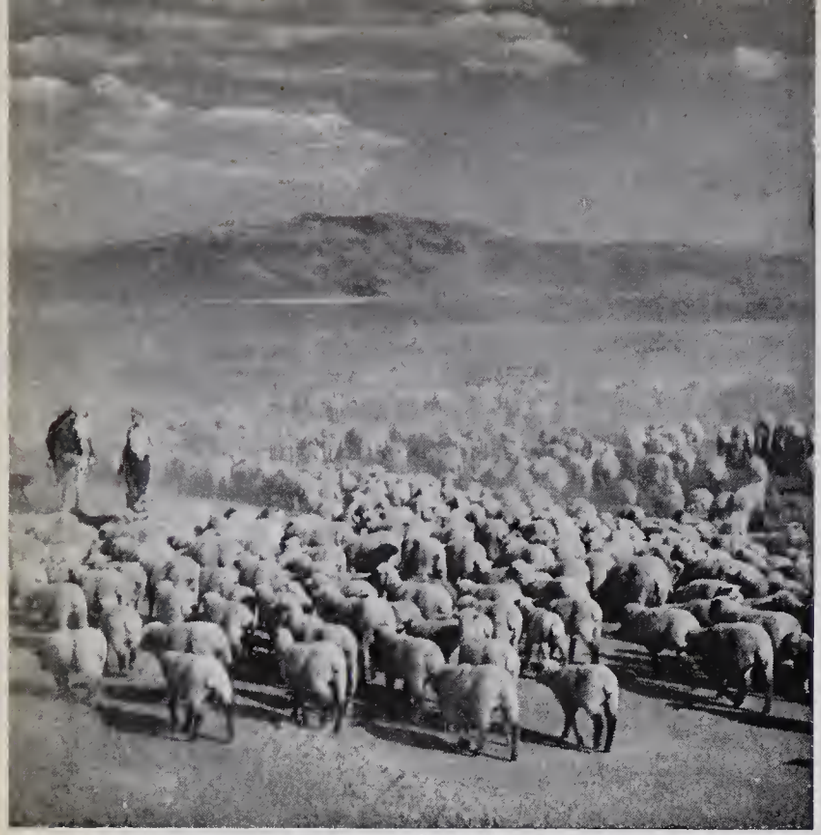
LAND, WATER, AND PEOPLE

Now we are ready to cross the mountains. Trace those mountains again with your finger. Begin at the northern boundary of the United States and move your finger southward along the Cascade Range, then along the Sierra Nevada, and finally along the range east of Los Angeles. Sometimes people talk about the ranges you have followed as a wall of mountains.

A DRY LAND

East of the mountain wall, the West is a dry land. A good way to start your study is by looking at the rainfall map. No part of the area east of the mountains has much rain. If you have forgotten why, read again the section on the Canadian mountain region. Most of the land just east of the mountains is very dry. It is too dry for farming, and most of it is even too dry for grass to grow. Only the kinds of desert plants that need very little water will grow there. This is the great region of desert vegetation you have read about and seen on your vegetation map.

The Rocky Mountains. But why does that extra-dry area not go all the way across the West? Look at the physical-political map. The winds blowing from the coast have to rise again and climb more mountains. They do not bring very heavy rain, even to the mountain tops, because they have not enough moisture left, but they have enough to bring more than 10 inches, and in some places, more than 20 inches of rain.



Courtesy Standard Oil Company of California

A flock of sheep in the West. Do you think many people live in this region?

Those mountains are made up of many ranges with many names. When we want to talk about all the ranges at once we call them the Rocky Mountains. They are very high and very wide from east to west.

Only the Columbia River and the Colorado River flow from the Rocky Mountains to the Pacific Ocean. Between these two rivers and their tributaries all rivers are lost in the desert. Their water dries up in the dry air or sinks into the dry soil.

East of the Rockies. East of the Rocky Mountains is a region you already know. That is the region we call the Great Plains. You saw part of it when we studied the Canadian prairies. The Great Plains in the West do not differ from these in the Middle West except that they are higher and a little drier.

A LAND OF WIDE-OPEN SPACES

From the Great Plains westward to the Cascades and Sierras, most of the West is range pasture. Many people who write stories about this part of the West call it the land of wide-open spaces. Sometimes we call it the cattle country or the cow country. You have already seen a little of the cattle country in southern Alberta and western Texas.

In the cattle country you see mile after mile of range pasture land. In this kind of country, some ranchers raise hay for the cattle to eat in winter.

Some of the range pasture looks like the land you see in the picture on page 147. Maybe you think that land like that would be very poor pasture. If you do, you are a good judge of pasture land. There is not much there for a cow to eat. A rancher with land like that must have a very big ranch. You do not often see more than three or four animals in one place, for the cattle scatter out over the land. Each cow must have many acres to graze over. She gets a bite of grass here and a bite there.

A cattleman is lucky if he has a stream on his ranch. Much more grass grows along a stream. The rancher may be able to get water from the stream to irrigate a few fields. Even more important, the cattle have a place to drink. On many ranches the water has to be pumped up from deep in the earth.

A great many parts of the cow country are among the low mountains. The mountain valleys usually have good grass for grazing. Even the short ranges in the Great Basin have grass, though the land around them is almost bare.

Ranchers who have only grass and hay sell the calves that are to be used for meat to corn-belt farmers who fatten them up. The western ranchers who can raise some food can wait till the calves are almost grown before sending them east for fattening.

Look at the beef-cattle map on the opposite page to see where beef cattle are raised in the West. You see that some parts of the West have many more dots than others. There are no dots at all in the driest

parts of the desert or among high mountains. Such places have no plants for cattle to eat.

The Great Plains are good cattle country. They have good range pasture land. If you look at the beef-cattle map, you will see that there are more cattle east of the Rockies than in most other parts of the West.

When we talk about this land as the cattle country, we are forgetting about the sheep. The map on page 160 shows where sheep are raised. You see that most of the sheep of the United States are raised in the West and in Texas. Sheep can live on western pastures that will not support cattle. They can eat shorter grass than cattle, and they eat plants that cattle will not touch. Therefore you find dots for sheep in desert regions that cannot support cattle.



Beef cattle in Canada and the United States.

PEOPLE AND WATER

The West is not quite all wide-open spaces. There are some small areas of dense population. Look at the population map. A few of the smaller clusters of dots stand for the people in mining towns, but most of the densely populated areas are irrigated land. Where people can add water to western land they get fine, fertile farms.

People cannot have irrigated farm land just anywhere in the dry region. They must have a supply of water. On page 156 you read about ranchers who irrigate a few fields for growing alfalfa or other hay crops. Many of them get water from small streams. Some of them have deep wells and pump enough water to irrigate a few fields. But this is not the kind of irrigation that brings many people together. The dark spots on the population map generally mean that the water for irrigating the land has come from a good-sized river. They mean many people on small farms, and towns that act as marketing centres for the farmers.

The Columbia River and its tributaries. Find the Columbia River on your map. The Columbia River has many tributaries, even in the dry region east of the Cascades. All these rivers flow down from mountains. The mountains have rain, even though the lower land is dry. These rivers supply water for irrigating the land in their valleys. We call these valleys by a special name — the Apple Valleys. Do you remember the apples in the Okanagan Valley? These valleys are all irrigated. Many of the farmers on the irrigated land specialize in apples, but they have other kinds of fruit trees too, especially cherry trees.

The Colorado River and its tributaries. You know something about the Colorado River already. Read again what is said about this river on pages 154 and 155.

Most of the irrigation water from the Colorado River goes to California. An aqueduct takes water to the Los Angeles area. On the southern boundary of California there is another large area irrigated by the Colorado. It is the Imperial Valley. Find it on the map on page 146. There is a picture of an irrigated field on page 153.

The Imperial Valley very seldom has any frost, and crops grow there all winter. The farmers grow big crops of winter vegetables and melons. Some farmers raise citrus fruits. Some raise cotton. Others have groves of date trees. Dates grow on *palm trees*, and they grow only in deserts. The fruit is very easily spoiled by frost. It is spoiled by rain too. The date tree must have

plenty of water, but it must get the water without rain. That is why dates grow only in places where desert land can be irrigated.

Irrigation east of the Rockies. East of the Rocky Mountains are the Great Plains. They are mainly cattle country.

We do not need to talk about every separate irrigated area on the Great Plains. Most of them are along the Missouri or its tributaries. On them, the farmers grow sugar beets, vegetables, potatoes, and melons.

A great many farmers grow feed crops, particularly alfalfa, on irrigated land. Many of them grow enough grain to fatten their own cattle. Some farmers even have a few acres of irrigated pasture land. On some of the irrigated land in Colorado, farmers specialize in raising lambs for meat.

OTHER POPULATION CENTRES

Mining centres. But irrigation does not fully explain the regions of denser population. There are also mining cities in this region. Almost any metal you can think of is mined somewhere in these mountains. Denver began as a supply city for miners. Miners bought supplies there before they went into the mountains. Denver is still the headquarters of many mining companies.

Denver is also the principal marketing centre for a large irrigated area. It has factories that use farm products as raw materials.

Now turn to the map on page 112. You notice that the railway lines running north and south near the foot of the mountains meet in Denver. Several lines run to Denver from the eastern part of the coun-

Denver. Notice the mountains rising from the plain on which the city was built.

O. Roach, Courtesy Denver Chamber of Commerce



try. One line goes west from Denver, through the mountains. Products from the mountains and the plains come to Denver to be shipped to market.

Pueblo, farther south, is an industrial city. Coal and iron are mined nearby, and Pueblo has big steel mills. It has many other factories, too. Cheyenne, in Wyoming, is the centre of a big oil field. This oil field is actually a link in the long chain of oil fields west of the Rocky Mountains, stretching from Texas through Alberta into the Mackenzie River valley.

Mountain people. Most of the towns in the highlands of the West are not the centres of any region of dense population. Some of the towns are marketing centres for cattle and sheep ranchers. The ranchers who pasture their animals on the slopes and valleys of the mountains must have places where they can take them to be loaded onto trains. They must also have stores where they can buy food and supplies.

Some of the mountain cities are mining centres. Butte, Montana, is a copper-mining city. The tunnels of the mines are under the city streets and buildings. Two of the largest copper mines in the country are at Bisbee in Arizona. It is a small city and is not on your map of the United States. There, miners scoop up the ore with power shovels. They do not have to dig tunnels in the earth.



Ewing Galloway

Salmon at a cannery. The fish will be cleaned, cut up, and packed in cans.

ALASKA

We can drive an automobile all the way to Alaska, if we want to, or we can take a bus, but we cannot go by train. There is a road, the Alaska Highway, which you read about in the section on the Canadian prairies, but there is no railway that goes to Alaska.

A great many people go to Alaska by ship. In the summer, big passenger ships carry people to Alaska for a pleasant vacation. Every spring, ships take thousands of workers to Alaska for the salmon fishing. Some of these people are fishermen, but more are cannery workers. Along the coast of Alaska there are many large fish canneries that are open only during the summer while the salmon are swimming up the rivers. During the rest of the year the canneries are closed, and the workers go back south.

The main business of this part of Alaska is fishing. Besides salmon, the fishermen catch halibut and other kinds of fish. They also catch huge crabs. Maybe you know the kind of crabs. You can buy the frozen meat anywhere. The package is labelled Alaska King Crab.

Gold. The map on pages 102-103 tells you that the main part of Alaska is mostly mountains and river valleys. Some of the mountains are very high. Mount McKinley,



A sheep map of the United States.

in the Alaska Range, is the highest mountain in North America. The mountains of Alaska are very beautiful. Because they are so far north, they have snow-capped tops all the year.

Fish are the most valuable product of Alaska, but they are not the most famous. The most famous is gold. When gold was discovered in the Yukon, many miners went up the Yukon River valley to the gold fields. Before long gold was discovered in Alaska too. There are still gold mines in Alaska, but these mines are worked by mining companies. The work now requires big machines and many miners. There are gold mines near Fairbanks and near Juneau and Ketchikan. Besides gold mines, there are coal mines and copper mines in Alaska.

The way east. Within the last few years increased air travel has made Alaska much more important than it ever was before. You will need a globe and a piece of string to to find out why.

Suppose you start with your own home and imagine you are going to Tokyo, Japan. On the globe, hold one end of a string at the location of your home. Stretch the string as tightly as you can between your home and Tokyo. That gives you the shortest possible air route. If you live anywhere in North America, the route you measure will cross or come very close to Alaska. Even if you lived in Washington, the capital of the United States, which is almost straight east of Tokyo, the shortest route would still swing to the north.

In the northern hemisphere, long east-and-west routes always curve to the north. In the southern hemisphere, long east-and-west routes always curve to the south. You can prove this by measuring between places on the globe with a piece of string. The farther a route is from the equator, the more it curves.

From some places the shortest route misses Alaska, but the regular passenger planes all stop at Alaska, just as they stop at Gander or Goose Bay, to refuel. To most people, Alaska used to seem very far away, but airplanes have now brought Alaska into the busy routes of world travel.

THE GEOGRAPHY WORKSHOP

You have now finished your study of the United States and are ready to find out how well you can use your new knowledge of the West and of the country as a whole.

I. GEOGRAPHY ON THE GLOBE

By now you have probably learned that measurements on a globe are not the same as measurements on a flat map. Since a globe is the same shape as the earth, measurements on a globe are most nearly correct.

1. Below is a list of ports around the Pacific Ocean. Sort them into three lists, according to whether they are nearest Seattle, San Francisco, or Los Angeles.

Vladivostok	Auckland
Shanghai	Manila
Hongkong	Honolulu
Singapore	Sydney

2. Using the shortest route, find out which of these cities, Los Angeles, San Francisco, Portland, or Seattle, is nearest (*a*) New York, (*b*) Chicago, (*c*) St. Louis, (*d*) New Orleans, (*e*) Windsor.

II. YOUR HOME AND THE WEST

Perhaps you would like to see what you can find out in your community about the West. The following suggestions will help you to find out more about your home and the West.

1. How far is your home from Denver? from Los Angeles? from San Francisco? from Seattle? Measure the distances on a globe. What direction is each one from your home? By what route would you travel to get there? About how long would your trip last?

2. No doubt some people in your community have travelled in the West. Ask some of them to tell you what they saw. Ask them to show you on a map exactly where they were.

III. HOW ARE THEY ALIKE?

The places in each of the following groups are alike in some way:

1. In what way are Montreal, Boston, New York, Los Angeles, San Francisco, and Seattle alike?
2. In what way are Philadelphia, New Orleans, and Portland alike?
3. In what way are the southern Appalachian region, the Los Angeles region, and the northwest alike?
4. In what way are the Rio Grande Valley, the Los Angeles region, and the Great Valley of California alike?
5. In what way are the Tennessee, Colorado, and Columbia rivers alike?

IV. GEOGRAPHY AND PEOPLE

What differences do rainfall, growing season, and natural vegetation make to the people of a region? What differences do they make in the density of population? How do they affect the way in which people make a living?

An aqueduct bringing water to the Los Angeles region.

Ewing Galloway




110°
100°
90°
UNITED STATES
Mississippi River
Gulf of California
LOWER CALIFORNIA
El Paso
Ciudad Juarez
SIERRA MADRE OCCIDENTAL
Chihuahua
Rio Grande
Houston
New Orleans
Nuevo Laredo
Laredo
Torreón
Monterrey
Durango
Mazatlán
SIERRA MADRE ORIENTAL
Gulf of Mexico
Tropic of Cancer
San Luis Potosí
Tampico
20°
Guadalajara
Mexico City
Mérida
YUCATAN PENINSULA
Puebla
Veracruz
Acapulco
Oaxaca
BRITISH HONDURAS
GUATEMALA
Guatemala
HONDURAS
Tegucigalpa
San Salvador
EL SALVADOR
CENTRAL
Managua
Pacific Ocean
80°
Caribbean Sea
10°
Colón
Gatun Locks
Gatun Lake
Madden Lake
CANAL ZONE
PANAMA
9°
Pedro Miguel Locks
Miraflores Locks
Panama
Scale of Miles
0 5 10 15 20 25
Pacific Ocean
110°
100°
90°
West Longitude


MIDDLE AMERICA
Scale of Miles
0 50 100 200 300 400
National Capitals
Other Cities
Shading from green through yellow, brown, and red indicates increase in altitude. Figures show approximate altitude in feet for corresponding color.
10,000 ft.
5,000 ft.
2,000 ft.
1,000 ft.
500 ft.
80°
70°
60°
30°
20°
10°
North Latitude
Savannah
Tampa
Miami
Nassau
BAHAMA ISLANDS
Atlantic Ocean
Havana
CUBA
ISLE OF PINES
Camagüey
Santiago de Cuba
HISPANIOLA
HAITI
DOMINICAN REPUBLIC
Port au Prince
Ciudad Trujillo
WEST INDIES
San Juan
PUERTO RICO
VIRGIN ISLANDS
LEEWARD ISLANDS
JAMAICA
Kingston
GUADELOUPE
MARTINIQUE
WINDWARD ISLANDS
Caribbean Sea
CURAÇAO
GRENADA
TRINIDAD
CARAGUA
AMERICA
Barranquilla
Cartagena
Maracaibo
Caracas
Barcelona
COSTA RICA
San José
Limón
Panama Canal
PANAMA
Panama
Magdalena River
Mérida
Orinoco River
Ciudad Bolívar
VENEZUELA
Medellín
COLOMBIA
Bogotá
Buenaventura
ANDES MOUNTAINS
163



MIDDLE AMERICA

We are now going to learn about the people who live in the southern part of North America. Their lands lie between the continents of North and South America. Part of the land is joined to these two continents, but part of it is made up of islands. We call this region Middle America.

When Columbus came to America, in 1492, he landed on one of the islands of the Caribbean Sea. He thought he had reached the East Indies, and so he called the natives Indians. We still call the islands the West Indies. Spaniards, in search of riches, followed Columbus. They conquered the Indians and settled the land.

The Indians on the mainland were farmers. They were used to working for their rulers and so did not find it very different to work for the Spanish conquerors. On the islands, the Spaniards started large farms or plantations. They planted sugar cane and tobacco. However, the Indians on the islands were not farmers. They ran away when the Spaniards tried to make them work on the plantations. The Spaniards had to bring Negro slaves from Africa to work for them.

Today, most of the people on the mainland of Middle America are Indians or of mixed Spanish and Indian ancestry. There are a great many Negro people on the islands of the West Indies, and many Spanish people. Most of the people of Middle America speak Spanish.

WHAT WE CAN LEARN FROM MAPS

COMPARE MEXICO WITH CANADA

1. Turn to the map on pages 162-163 and find Mexico. Follow its land and water boundaries with your finger so that you will know just where they are.

2. Turn to the map of North America on pages 22-23. Lay a piece of thin paper over Mexico and trace the boundaries. Be careful that the paper does not slip as you work. Cut out your outline map of Mexico. Lay your map of Mexico on Canada. Do not pay any attention to directions. Lay the map of Mexico on it any way you like. Just make sure that some part of Mexico covers your own home. What provinces besides your own are included in an area the size and shape of Mexico? About how much larger than Mexico is Canada?

GET ACQUAINTED WITH COUNTRIES AND NAMES IN MIDDLE AMERICA

In Middle America there are ten independent countries. By independent we mean that they have their own governments and do not belong to any other country. Mexico is one of the independent countries. The other independent countries are Costa Rica, Cuba, the Dominican Republic, Guatemala, Haiti, Honduras, Nicaragua, Panama, and Salvador. Put their names on an outline map of Middle America. Add the names of the countries that are not independent.

A worker on a sugar estate in British Guiana is cutting the sugar cane with a machete.

Courtesy United Kingdom Information Office



The Administration Building of the new University of Mexico. It is an example of modern architecture in Middle America.

Courtesy Canadian Pacific Railway





Ewing Galloway

This farm family live on the plateau near Mexico City. They grow crops and keep farm animals.

MEXICANS AND THEIR LAND

Look at the map, pages 162-163, to find the two big mountain ranges of Mexico. These two ranges merge south of Mexico City to form one range. Between the Sierra Madre Occidental and the Sierra Madre Oriental is a high plateau, broken frequently by small mountain ranges. You will notice that there is little lowland in Mexico except for the Peninsula of Yucatan.

Most of Mexico is highland, but the highland is not all mountain, as you know. The southern end of the plateau has the best farming country in Mexico, but not all of the plateau is good for farming.

Mexico has thousands of miles of wasteland. Some of these wastelands are mountains, some are deserts. The farmers of Mexico have a growing season that lasts all the year round; they have plenty of warm weather, but they do not all have plenty of rain. On the rainfall map find the parts of Mexico that have less than 20 inches of rain in a year. Most of the dry land has desert vegetation of some sort, and some of it is fairly good grazing land. The arid land is a region of ranches. Cattle, sheep, and goats graze on the desert vegetation. However, some of the land is too dry to be of any use at all. The long peninsula of Lower California, for example, is a real desert. It has scarcely any people.

Parts of Mexico have a very heavy rainfall. Because the wind blows from the east in the tropics, the east coast lowlands have a heavy rainfall. Few people live in this hot, moist, rank region.

Mexican farmers. Since about two-thirds of the Mexican people are farmers, we shall look at the farmers first. As you know, we shall not find farmers everywhere in Mexico. Find the most densely populated region on the population map. Now find the same region on the physical map. Put your finger on Mexico City and move your finger northward to San Luis Potosí. You have touched

the region that has the most people and the most farmers. But there are farmers in other regions, too. Even in the dry regions there are farms on irrigated land.

Most Mexican farmers live in villages, not on their farms. They go out every day to their land, which is near the village. At the centre of the village there is a church and a school. There may be stores, but people do most of their shopping at the village market.

Almost every Mexican farmer raises corn, beans, and peppers. He and his family eat these foods at almost every meal. The women usually grind the corn into meal and make it into corn-meal cakes called tortillas. They are very much like pancakes. The beans that they eat are not like our beans. Mexican farmers grow various kinds of peppers, which they use for seasoning.

Most Mexican farmers grow many vegetables. They grow tomatoes and onions. They also grow many eggplants, squashes, cucumbers, and melons. In northern Mexico, farmers grow winter vegetables for sale in Canada and the United States. Mexican farmers also raise vegetables to sell in city markets in their own country.

Mexican farmers grow other crops for sale, too. Some of them grow oranges, bananas, pineapples, avocados, and other warm-climate fruits. Some of them grow wheat. Some of them grow cotton.

One special crop grows on the Peninsula of Yucatan, *sisal* plants. The rainfall map, pages 8-9, shows that the Yucatan Peninsula does not get as much rain as most of the eastern coastal region. The land is even drier than you would expect, for the soil and rock are the kinds that soak up the water very quickly. There, farmers grow sisal. From the leaves of the sisal plant, the farmers get a fibre that can be made into coarse twine.

One-third of the people. Mexico has many cities. Some of the cities are quite large. Mexico City has a million and a half people.

City people in Mexico do all the kinds of work that city people everywhere do. Many Mexicans are very skilful craftsmen. Craftsmen are people who make things with hand tools. Mexican craftsmen make jewellery and silverware, rugs, furniture, pottery, baskets, straw hats, and toys. Women do embroidery and make clothing by hand. Tourists buy many of the things made by the craftsmen, because they are made nowhere else.

Many Mexicans are miners. More silver is mined in Mexico than in any other country in the world. Mexicans also mine gold, copper, lead, and zinc. At Monterrey, in northeastern Mexico there are steel mills. The iron ore comes by train from mines near Durango, far to the southwest, but the coal is mined near Monterrey.

Mexico has an oil region along the eastern coast, near Tampico. There are oil wells and the refineries there. Much oil is exported through the port of Tampico.

LAND AND PEOPLE IN CENTRAL AMERICA

Sometimes people call the Rocky Mountains the backbone of North America. In Mexico the mountains continue, though they are no longer called the Rocky Mountains. When we come to Central America the mountains are about all that is left of the continent.

Because of the mountains, the little countries of Central America have regions that are very different from each other. On the side toward the Caribbean Sea, the rainfall is very heavy. The weather is hot and damp all the year round, and in consequence thick forests cover the land.

On the Pacific side of the mountains, most of the rain comes in the summer and the winters are dry. Because of the dry season, there are no thick forests.

The high mountain valleys are the most pleasant places in Central America. They have the best climate for many crops. Many more people live in the highlands than in the lowlands.

The people of Central America. Most Central Americans are Indians or part Spanish and part Indian.

In the cities of Central America people live much as city people everywhere do. The cities do not look like the old Indian cities, because it is the people with Spanish ancestors that usually live in the cities.

Most Central American farms are small, and little fields extend up the steep slopes at the sides of the valleys.

Some of the farmers now have machines, but more of them use oxen or horses to pull their ploughs. They still do much work by hand. Many farms are on slopes too steep for machines.

The farmers of Central America are much like the farmers of Mexico. On their farms they raise nearly everything they eat. Corn is the most important food crop, and beans are also raised in large quantities. Most farmers grow other vegetables and fruit. Where there is plenty of rain, a farmer usually has a few stalks of bananas and a little sugar cane.

When farmers raise more food than they need, they take the extra produce to market. Sometimes the farmers live a long way from the nearest market. Whole families may walk all night carrying baskets of fruit and vegetables, a few stalks of sugar cane, or a crate of chickens. They may also be leading a goat or a pig.

The highland farmers also grow crops especially for sale. In all parts of the highlands of Central America, the farmers grow

Locks in the Panama Canal. Notice the difference between the height of water in the nearest lock and in the second lock on the right side.







Courtesy C.I.A.A. *H. Armstrong Roberts*

These two pictures show you how bunches of bananas are harvested on a plantation in Central America.

coffee. It grows best on the western sides of the mountain ranges. Tobacco is a better crop for the eastern slopes.

There are few farmers in the lowlands of Central America. The climate is unpleasant, and the plants grow so quickly that it requires a lot of effort to keep the land clear. However there are a few farms — big ones. Some people from the United States and Britain have large banana plantations on the lowlands. They have big machines to clear the land and keep it clear and to dig ditches to drain the swamps.

Some of the people who live in the lowlands make a living by tapping chicle trees. The chicle is used in making chewing gum.

The Panama Canal. Find Panama on your map. There, a thin strip of land joins North America to South America. Such a narrow strip of land joining larger land areas together is called an isthmus. This is the Isthmus of Panama. Another isthmus that you know is the Chignecto Isthmus in the Maritimes.

In the early days, ships had to go around the southern end of South America if they wanted to go from the Atlantic to the Pacific Ocean. You can see on your globe that this is a very long trip. A canal built through Panama would greatly reduce the cost of trips for trading vessels and would allow navies to be brought from one ocean to another quickly in time of war. For these reasons the United States government decided to build a canal across the Isthmus of Panama. It rented a strip of land across the isthmus from the government of Panama and built the canal. The United States controls the Canal Zone, as the strip is called, and keeps people there to defend and take care of the canal.

If you look at the physical map you will see why the Isthmus of Panama was the best place to build the canal. Not only is the continent narrow there, but the mountains are lower than in any other place. If the canal had to be carved through higher mountains it probably could not have been built.

Ships from many countries use this short-cut to cross between the Atlantic and the Pacific Ocean. Each ship pays a toll charge to the United States government for using the canal, but the charge is less than the cost of sailing around South America.

ISLAND PEOPLE IN THE WEST INDIES

Now we come to the islands of Middle America. Suppose we start by going back to the map on pages 162-163. First, find the name West Indies. That is the name we use when we talk about all the islands. It includes every one of them, large and small.

Greater Antilles is the name given to the group of larger islands — Cuba, Jamaica, Hispaniola, and Puerto Rico.

Find the name Bahama Islands. They are all the small islands north of Cuba.

Start just east of Puerto Rico and move your finger south around the whole curve of small islands. We use the name Lesser Antilles for all these islands.

THE BIG ISLANDS

We have said that the Greater Antilles are the big islands of the West Indies; but how big are they? Together they are about one-third the size of Alberta. In this small area are three independent countries, an island that belongs to Great Britain, and an island that belongs to the United States.

You are looking across a valley in Jamaica. Most of the islands have rough mountains.

Ewing Galloway



Sugar in Cuba. Most of the people who live in Cuba are farmers, but there are cities there too. Havana, capital of Cuba, has more than half a million people. It is famous for its beauty. It is also a busy seaport.

Cuba is a little country, but in one thing it is the biggest in the world. It exports more sugar than any other country. All over Middle America farmers grow a little sugar cane for their own use, but it pays a farmer to grow sugar cane to sell only if there is a sugar refinery near him. Sugar cane must get to the sugar mill very quickly after it has been cut. In Cuba, the sugar mills are large factories. People call them sugar centrals.

Sugar cane is not the only crop grown in Cuba. Havana cigars, made from Cuban tobacco, are famous the world over. In the western end of the island many farmers raise tobacco, most of which is made into cigars. Cigar-making is a big business in Havana.

Most Cuban people eat rice and beans every day. They grow part of their food on their farms, but they have to import some as well. Corn is another important food. Farmers grow it everywhere in the islands. They also grow many vegetables and fruits and raise cattle and chickens. There are dairy farms to supply milk and butter to the cities. Cuban farmers raise so many beef cattle that they have meat to export.

The United States is a big market for Cuban farmers. They send warm-climate fruits, especially pineapples, grapefruit, avocados, and bananas there. The vegetables they send are common, everyday ones, not special tropical ones. Cuba sends tomatoes, okra, lima beans, eggplants, peppers, and cucumbers.

Jamaica, an island of bananas and spices. If you were flying to South America, you would very likely stop at Jamaica, for

Kingston, Jamaica, is the great air centre of the West Indies.

Jamaica is often called the "banana island" because bananas are grown there on great plantations just as they are in Central America. The northern coastal lowland, with heavy rainfall, plenty of sunshine, and high temperatures the year round, is well suited to raising bananas. Many of the bananas are exported to Europe and Canada. You know that Jamaica is part of the British Commonwealth. The southern coastal lands are rather dry. Mountains rob the northeast *trade winds* of much of their moisture before they blow over the southern coast. There bananas and sugar cane are raised by irrigation. Farmers on the drier side also grow cacao. Chocolate is made from the big seeds of the *cacao tree.*

Jamaica is noted for bananas, but it is probably still more famous for its spices. Jamaica ginger is known all over the world, and Jamaica allspice also is widely used.

Canada gets bauxite for its aluminum industry from Jamaica.

Hispaniola. You read on page 164 that the European settlers on the islands brought Negro people from Africa to work on the sugar-cane plantations. In the West Indies there are now many more Negroes than white people. On Hispaniola, the Negroes eventually drove the Europeans out of half of the island and set up a Negro republic called Haiti. The eastern part of the island is the Dominican Republic.

Hispaniola has four ranges of wild, beautiful mountains, and even though the island is in the tropics, the high mountains sometimes have frost at night. Forests cover more than two-thirds of the land. The forests contain valuable trees, but only a few are cut for lumber, because they grow in the mountains where transportation is difficult.

Most of the people of Hispaniola are farmers. They live on narrow strips of lowland, where the land can be farmed. In this part of the world the winds usually blow from the northeast. Because of these winds, the northern and eastern parts of the island get the heaviest rainfall. The northern slopes of the mountain ranges get much more rain that the southern slopes. The difference in rainfall make a difference to the farmers.

In the wetter parts of the island, the farmers raise cacao and tobacco for sale, and some of them grow bananas. Farmers raise coffee on the mountain slopes. The best sugar-cane region is the lowland in the southeast.

Most farms on Hispaniola are small. Many farmers grow *root crops* for food. Their root crops are sweet potatoes, yams, and *cassava.* Most farmers raise plantains. These are a kind of banana that is especially good for cooking. Of course, they have many other kinds of fruit. On wetter lands, the farmers grow rice.

The driest lands of all are too dry for farming. They are cattle ranches. There is a meat-packing plant in Ciudad Trujillo.

Puerto Rico. Puerto Rico is the smallest of the Greater Antilles. It is about a hundred miles long and thirty-five miles wide. Find it on the map. You see that it is the farthest east of the Greater Antilles.

Puerto Rico is always warm but never very hot, because the ocean winds cool it. The southern part of the island is dry in winter, and some of the land has been irrigated. You should be able to explain why the southern coast is drier than the rest of the island.

You may think of Puerto Rico as a sugar island, for it has many large sugar plantations. We can hardly call the workers on these plantations farmers, because they are hired to work by the day. They live in villages on the plantations. They do not grow their own food but buy dried peas and beans, salt pork, and dried codfish at a store on the plantation. Where do you suppose those dried codfish come from?

The farms of Puerto Rico are not all big sugar plantations. A great many farmers have their own small farms. For food they raise corn, beans, sweet potatoes, and fruit. These farmers also grow crops to sell.

The farmers in some of the mountain valleys grow the same type of tobacco that Cuban farmers grow. On the higher and steeper slopes, the farmers raise coffee.

THE LITTLE ISLANDS

There are two groups of little islands: the Bahamas and the Lesser Antilles. The Bahamas and most of the Lesser Antilles belong to the British Commonwealth.

The Bahamas. In our country most people think of the Bahamas as a wonderful place to spend a winter vacation. Nassau is the principal resort city in the Bahamas.

They are low islands, and in consequence do not get heavy rain. Nor is the soil good for farming. The few farmers there grow vegetables to sell to hotels. Sisal was brought there from Mexico and grows well.

In the Bahamas, many people are fishermen. The water around the island is shallow, and almost any place is a good place to fish.

The Lesser Antilles. People who visit the Lesser Antilles remember clean, sandy beaches with tall *coconut palms* waving above them. They remember the wind that rolls big waves up on the beaches and bends the feathery tops of the palm trees.

Most of the islands look like mountain tops, which is what they are. Small as they are, many of them have mountains that rise several thousand feet above sea level. Because of the mountains, the same little islands — just a speck on the map — may have two kinds of climate. Like the big islands, the little islands have a dry *leeward* side and a rainy *windward* side.

Sugar cane grows on nearly all the islands. Besides sugar cane, farmers grow many vegetables and tropical fruits and nuts. They have coconuts, limes, and lime juice to sell. Where the climate is just right, farmers grow cacao. Many of them grow cotton.

We call Trinidad one of the Lesser Antilles, but on the map it looks like a broken-off piece of South America. Trinidad has oil wells, and a lake of *asphalt*. Sugar and cacao are the chief farm products. Like Jamaica, it is also a great air centre.

Port of Spain in Trinidad has been chosen as the capital of the new British Caribbean Federation.

THE GEOGRAPHY WORKSHOP

I. WHERE IS MIDDLE AMERICA FROM YOUR HOME?

Look at the globe and find the mark that shows the location of Mexico City. Now find the location of your home town. In what direction is Mexico City from your place? By using a piece of string or distance scale, see how far it is by air from your place to (*a*) Mexico City, (*b*) Havana, Cuba, and (*c*) Kingston, Jamaica.

What provinces are directly north of Middle America?

II. A TRIP TO MIDDLE AMERICA

Suppose we were to plan a trip to some of the countries of Middle America. Perhaps the class could divide into several teams to plan tours to several of the countries. Plan what route would be best. Find out the time required to go to the place your team has decided to visit. What time of year would be best for your trip?

Describe some of the things that you would like to see and gather pictures of as many of them as possible.

III. THE WORLD IN YOUR COMMUNITY

There are many things in your community that may have come from Middle American countries.

Make a list of them and tell from which country they may have come. You might start your list with rope. From what plant are the fibres for making rope taken? In what country is it grown?

IV. MATCHING PARTS OF SENTENCES

In the left-hand column are beginnings of sentences. Make a correct statement by fitting each beginning to an ending in the right-hand column.

1. Middle America is made up of the lands that lie between the United States and .....
2. The leading products of Mexico are ...
3. Lower California is a part of .....
4. The city sometimes called the Pittsburgh of Mexico is
5. The Peninsula of Yucatan is a .....
6. Middle America farmers eat .....
7. Central America is made up of .....
8. The smallest and most thickly settled country in Central America is .....
9. The Canal Zone cuts across .....
10. Even though the West Indies are fairly near the equator, the climate is comfortable because of the .....
11. Cuba is most important for the growing of .....
12. Jamaica is famous for its .....

..... Mexico.

..... Salvador.

..... Panama.

..... northeast trade winds.

South America.

spices.

minerals.

Monterrey.

... sugar cane.

... large coastal plain.

..... corn, beans, and peppers.

.....seven small countries.

A road in St. Vincent, one of the Windward Islands. The people you see are Negroes; they speak English.

Burton Holmes from Ewing Galloway




SOUTH AMERICA
Scale of Miles
0 100 200 400 600
National Capitals
Other Capitals
Other Cities
Shading from green through yellow, brown, and red indicates increase in altitude. Figures show approximate altitude in feet for corresponding color.
10,000 ft.
5,000 ft.
2,000 ft.
1,000 ft.
500 ft.
Gulf of Mexico
Havana
70° West Longitude
60°
Tropic of Cancer
50°
40°
20°
WEST INDIES
LEEWARD ISLANDS
WINDWARD ISLANDS
Caribbean Sea
CENTRAL AMERICA
Point Gallinas
Barranquilla
Maracaibo
Lake Maracaibo
Caracas
Port-of-Spain
TRINIDAD
Ciudad Bolívar
River
VENEZUELA
Georgetown
Paramaribo
Cayenne
Medellín
Bogotá
COLOMBIA
Orinoco
GUIANA
GUIANA HIGHLANDS
(British) (Netherlands) (French)
10°
Equator
0°
South Latitude 0° North Latitude
Quito
ECUADOR
Guayaquil
Rio Negro
Manaus
Belém
Amazon River
Madeira
Iquitos
Fortaleza
Cape São Roque
Point Aguja
Trujillo
PERU
ANDES
Rio
BRAZIL
Recife
Francisco
São
Lima
Cuzco
Lake Titicaca
La Paz
Arequipa
Cuiabá
BRAZILIAN
Pacific


BOLIVIA
Sucre
HIGHLANDS
Paraná
Belo Horizonte
PARAGUAY
Rio
São Paulo
Rio de Janeiro
Santos
Curitiba
Antofagasta
Asunción
Tucumán
Tropic of Capricorn
Tropic of Capricorn
ANDES MOUNTAINS
Paraná
Uruguay
Pôrto Alegre
Córdoba
Santa Fé
Río
Río
URUGUAY
Mount Aconcagua
Mendoza
Rosario
Valparaíso
Santiago
Buenos Aires
Montevideo
Río de la Plata
Concepción
ARGENTINA
Bahía Blanca
FALKLAND ISLANDS
Strait of Magellan
Punta Arenas
SOUTH GEORGIA
Cape Horn
Pacific Ocean
Atlantic Ocean
20°
30°
40°
50°
100°
90°
80°
70°
60°
50°
40°
30°
20°
175



SOUTH AMERICA

There have been European settlers in parts of South America for over 400 years, but there are still many parts where there are no white settlers, and not even many Indians. However, every year now, new settlements are being started, many of them in places that would be very hard to reach without airplanes.

The Europeans were mainly Spanish and Portuguese. Brazilians speak Portuguese. Most of the rest of the people in South America speak Spanish.

You may think of South America as being a very old land and a very new land. It had European settlers long before there were any in our own country, but it also has good land that has yet to be pioneered. People have not moved to such places because there were no good transportation routes connecting them with the outside world. Settlers could get to these places of course, if they were willing to go to some trouble, but once there they had no way of getting things from other places and they could not send their products to other places to be sold.

South America has big cities and lands with scarcely any people. It has thick forests and lands where hardly anything grows. It has many different kinds of regions. That is what we should expect, for South America is a whole continent.

WHAT WE CAN LEARN FROM MAPS

In studying South America, you are going to need a good many new maps. The first thing to do is to find the location of South America on the earth.

WHERE IS SOUTH AMERICA?

Point toward South America from your home. Did you point straight south? If you live farther east than Lake Huron, you were correct. You pointed toward some part of South America. But if you live farther west, South America is not south of you.

You can find the location of South America on the globe. Use a globe to answer the following questions:

1. Find the westernmost point of South America. Put your finger on it and move north. What part of our country do you touch first?

2. Find the easternmost point of South America. Move your finger straight north from this point. What land do you touch first?

3. What part of Canada is nearest to South America? You will find that you have to give two answers. Two parts of Canada are almost the same distance from South America.

FIND THE COUNTRIES OF SOUTH AMERICA

Turn to the map of South America on pages 174-175. You see that boundary lines divide the continent of South America into countries. Find the countries described in the paragraphs that follow:

1. The largest country in South America. It extends farther to the east than any other country in South America.

2. The country in South America that is nearest mainland United States.

3. Three small areas that belong to countries in Europe. What country does each one belong to?

4. The only independent country in South America that is entirely in the northern hemisphere. The northern hemisphere is the half of the earth that is north of the equator. The southern hemisphere is the half of the earth that is south of the equator.

5. A very long, very narrow country on the Pacific coast. It is entirely in the southern hemisphere.

6. A small country that is entirely south of 30° south latitude.

7. A small country on the Pacific coast that is partly in the southern hemisphere, partly in the nothern hemisphere.

8. A small country that is crossed by the Tropic of Capricorn. Most of it is lowland, and it has no seacoast.

9. Another country that has no seacoast. It is between the Tropic of Capricorn and 10° south latitude.

10. A large country that is almost all south of the Tropic of Capricorn. It is on the Atlantic side of the continent.

11. A country on the Pacific coast that just misses the equator.

These animals are llamas. They are carrying ore from a mine down to the valley.

Courtesy Standard Oil Co.



LEARN TO USE THE NEW RAINFALL MAPS

You used rainfall maps in your study of North America. You had a rainfall map for Canada and the United States. For each area, you had just one rainfall map that showed the rainfall for a whole year.

At the top of page 179 you see two rainfall maps of South America. One shows the average rainfall from the first of November to the last day of April. The other shows the average rainfall from the first of May to the end of October. Each map shows the rainfall for six months, half a year.

We cannot say, of course, that one shows winter rainfall and the other shows summer rainfall. The months between November and April are winter months north of the equator. They are summer months south of the equator. The months between May and October are summer months north of the equator and winter months south of the equator.

You see that the two rainfall maps of South America are very different. For example, most of southern Brazil has more than 40 inches of rain from November 1 to April 30. From May 1 to October 31, most of the same area has only 10 to 20 inches of rain.

On the first rainfall map, move your finger around the area that has 40 inches of rain or more. Then move your finger around the same area on the second rainfall map. On the first map the whole area seems to be one rainfall region. On the second map, the area seems to be divided into several rainfall regions.

Show that you know how to use the rainfall maps by answering the questions in the paragraphs that follow. Use the map on pages 174-175 to locate the place names.

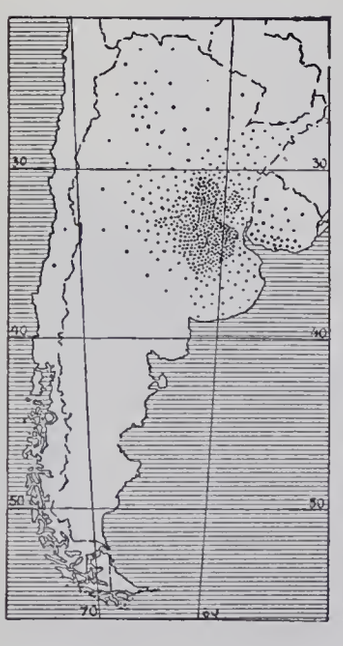
1. Start with the land along the boundary between Brazil and Bolivia. How much rain falls from November to April? How much rain falls from May to October?

2. Now look at the southern part of the coast region of Chile, from about 40° south latitude to about 50° south latitude. How much rain falls from November to April? How much rain falls from May to October? Does this region have heavier rainfall in summer or in winter?

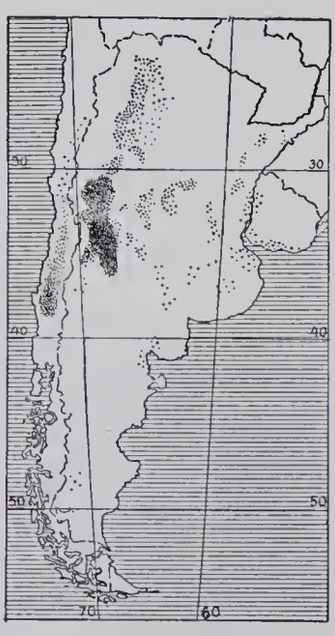
3. Find the part of Argentina that is just south of Buenos Aires, the capital. How much rain falls from November to April? from May to October? Is there more in summer or in winter?

4. Put your finger on the Caribbean coast of Colombia near the Isthmus of Panama.

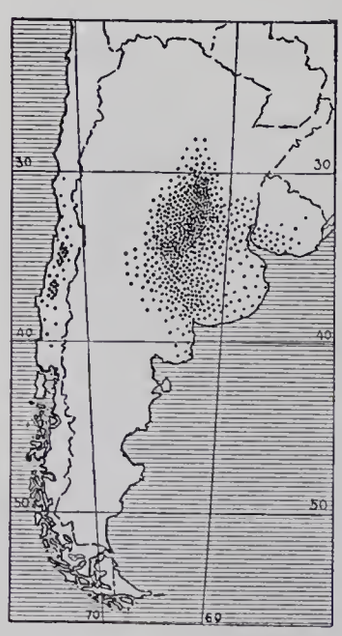
A flax map.



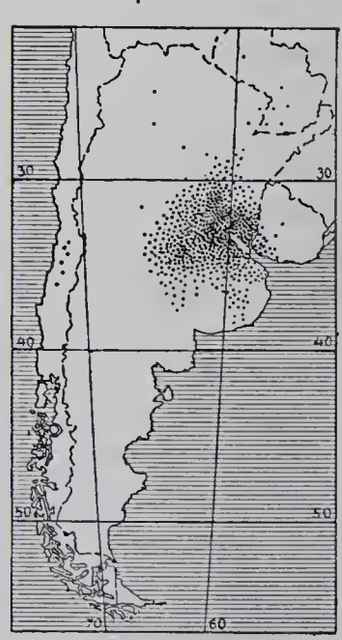
A grape map.

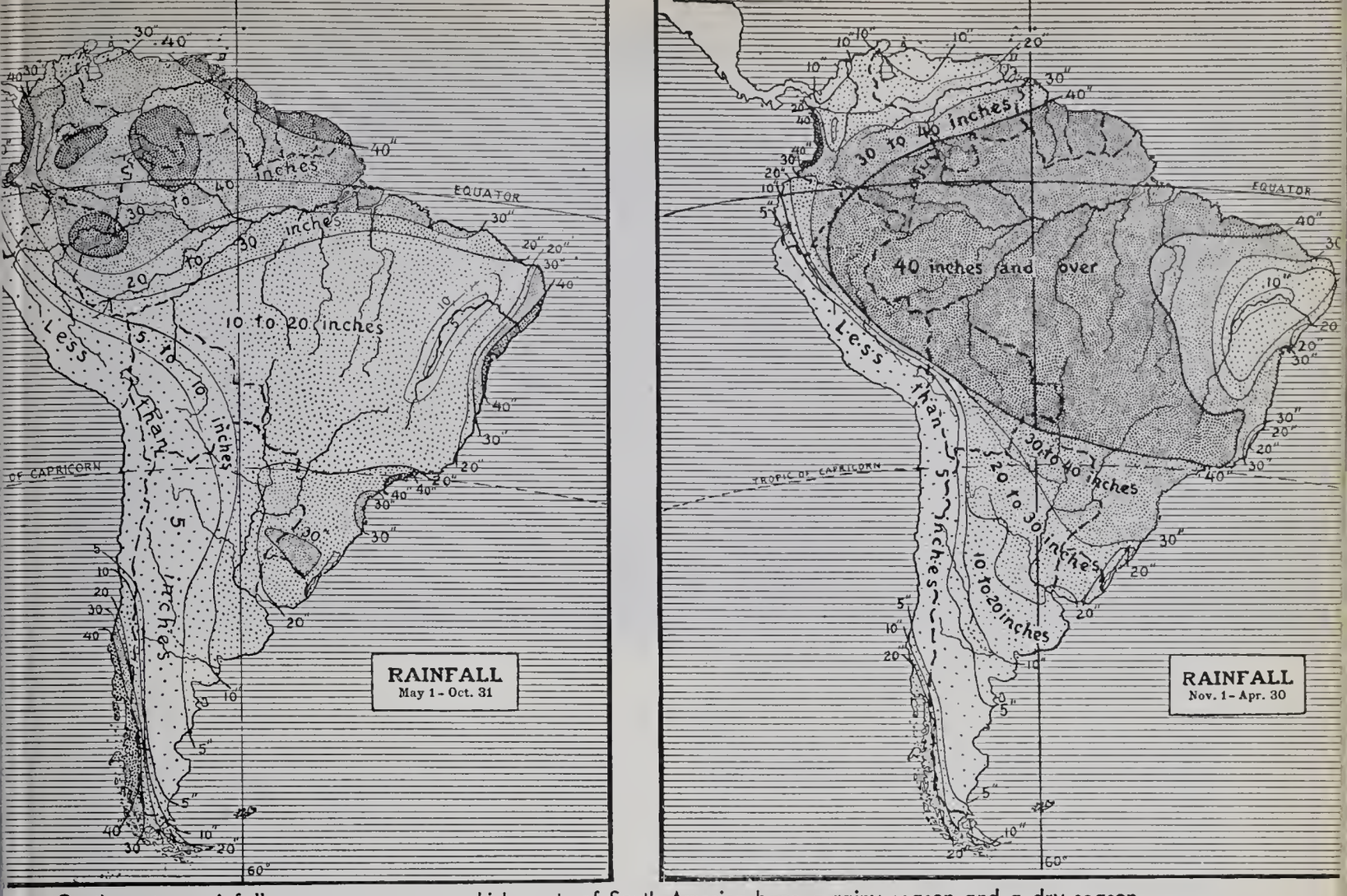


A wheat map.



A corn map.





On these two rainfall maps you can see which parts of South America have a rainy season and a dry season.

Does this region have more rain from November to April or from May to October? Does it have more rain in summer or in winter?

5. Put your finger on the coast of Argentina just north of 50° south latitude. How much rain falls there from November to April? How much rain falls from May to October? From this place move your finger northward over the region that has little rain at any time. What countries do you touch?

6. Find the mouth of the Amazon River. How much rain falls there from November to April? How much rain falls from May to October?

FIND THE TEMPERATURE REGIONS

The map in the lower left-hand corner of page 183 shows the temperature regions of South America. With it, you will need to use maps that show altitude.

On the temperature map, find the key that explains the temperature regions. The first place in the key is labelled "always hot." You should not be surprised to find that this region is always hot. It is near the equator and it is lowland.

Follow the equator westward across South America. You come to places that are always mild. That means that the weather is never very hot or very cold. Use the map on pages 174-175 to explain why the weather is never very hot.

You can find a long, narrow region that has cool weather the year round. The northern part of it is in the tropics, between the Tropic of Capricorn and the equator. Still, it is always cool. Can you explain why it is always cool?

You need not find all the temperature regions now or try to learn where they are. We shall come back to them later as we continue with our study of the continent of South America.



Philip Gendreau

A farm in southern Brazil. The tall trees are pines.

WHAT ARE THE VEGETATION REGIONS?

The second map on page 183 is a vegetation map. The key has only three spaces. What do they show?

In South America there are several different kinds of forest land. They have special names, which you need not learn until later. There are several kinds of grassland, too, which also have special names.

Now we are going to ask you to compare the vegetation map with the climate maps.

1. Probably the first thing you noticed on the vegetation map was the big dark area labelled "tropical forest." In what temperature region is the tropical forest? How much rain does most of the region have from November to April? How much rain does most of the region have from May to October? You find that this region has hot weather and much rain the year round.

2. South of the tropical forest you find a big area labelled "tropical grasslands." It is in two temperature regions. What are they? The weather is warm enough for grass to grow the year round in both regions. How much rain does most of the tropical grassland have from November to April? from May to October?

You find that the grassland region has a dry season. Tropical-forest trees need rain the year round. They cannot live where there is a long dry season. Grasslands are often found in regions that have a dry and a rainy season or where there is not much rain at any time of year.

3. Find an area labelled *"llanos"* north of the tropical forest. Llano is a Spanish word for a plain — an area of level land. What is the natural vegetation of these plains in northern South America? How much rain do they have from November to April? How much rain do they have from May to October?

WHERE DO PEOPLE LIVE IN SOUTH AMERICA?

Look at the population map on pages 14-15. On this map you can see several solid red areas. There are a great number of people living in these places. There, large cities surrounded by good farm lands are found. Where there are many people there must be good farms to grow food for the people. Turn to the map of South America on pages 174-175. Find the names of the cities in these red areas.

You can see several areas that are striped. There are many people living in these areas too. Are these places close to the coast or are they near the middle of the continent? Where do most people in South America live, near the coast or near the middle of the continent? Can you guess why they live where they do?

There is a large part of northern South America where the people do not live very close together. Find this area on the population map. Now find the same area on the maps of temperature regions and vegetation. Can you tell why there are not as many people there as there are near the coast?

In our study of South America we are going to see how people live in different parts of the continent. Remember that there are ten countries and three colonies in South America. Can you name them?

TROPICAL FORESTS

PEOPLE OF THE AMAZON TROPICAL FOREST

Can you imagine travelling through a thick forest on an ocean ship? You can do just that in the tropical forest of South America. You can get on a ship in Canada and get off at Manaus, Brazil. Do not look for Manaus on the seacoast just because it is a port for ocean ships. Follow the Amazon River 1000 miles upstream and you will find it.

Maybe you have seen big rivers. The St. Lawrence River is very big, and there are other big rivers in Canada too. But you have not seen a river as big as the Amazon unless you have seen the Amazon itself. It is the widest river in the world.

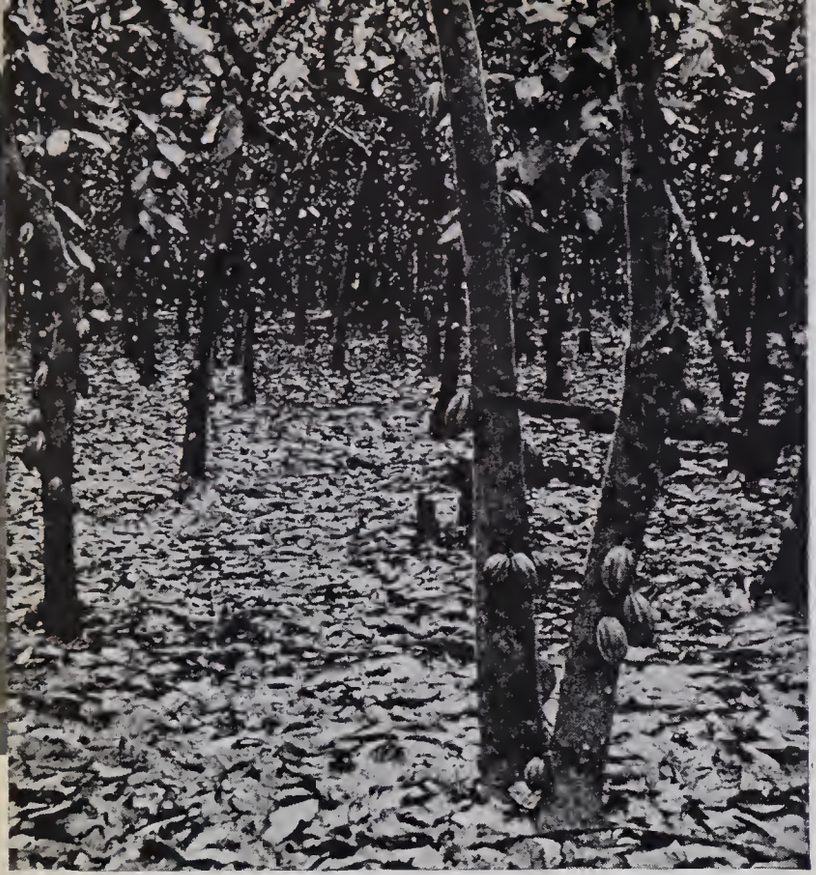
Put a piece of tracing paper over the Amazon lowland on the map on pages 174-175. Find the first tributary of the Amazon on the north. Draw a line from the mouth of the Amazon around the source of the first tributary, then around the source of the next tributary. Continue the line around the sources of all the tributaries till you get back to the mouth of the Amazon. All the land inside the line that you have drawn is drained by the Amazon River and its tributaries. This is the Amazon Valley. You see that the Amazon flows practically from one side of the continent to the other. Take your tracing paper and put it over Canada on the map of North America. Then put it over the United States. Are the scales of these two maps the same? Is the Amazon Valley very large?

Your maps tell you that the Amazon Valley is always hot, and that it is covered with dense tropical forest. The vegetation is so thick in the forest that when you look up you cannot see the sky, only leaves.

An Indian village. Most of the people who live in the Amazon forest are Indians. Many villages have only one house, though some villages have two or three. The houses are fairly large, and several families (which are all related) live in them. The house is made of palm leaves placed over a wooden framework, and it has no floor except the earth. Each family has a fire on the dirt floor over which they do their cooking. The cooking pots are clay vessels, which the Indians themselves have made. Each person has a hammock, made by tying plant fibres together, to sleep in instead of a bed.

The people do not need warm houses, but they do need houses to keep off the rain, for there is rain every day. People talk about a rainy season and a dry season, but the dry season is not dry; it is just a little less wet than the rainy season.

Farming in the forest. The Indians pick wild fruit and nuts, they hunt with bows and arrows, and they fish in the streams, but



Courtesy Pan American Union

These are cacao trees on a plantation. Look for the seed pods on the trunks of the trees.

because wild food is hard to get in the forest the people raise most of their food.

It is very hard to clear the forest. The Indians chop down the vines and some of the smaller trees. Then they chop away the bark around the larger trees. When this is done, the tree dies, the leaves fall off, and sunshine can reach the ground.

The Indians do not plough the ground or even hoe it. Instead they make holes with a stick and drop the seeds in. The most important crop plant has several names, but the names you hear most often are cassava and *manioc*. Cassava plants have big roots that are good to eat. The Indians make a kind of bread from them and use them in many other ways. Other plants that the Indians grow in their gardens are corn, beans, and sweet potatoes.

The Indians use their gardens for only a few years. Everything grows so fast in the tropical forest that they cannot keep the land cleared of fast-growing trees and vines. It is easier to clear a new patch of forest than it is to keep the old patch cleared and fertilized. The heavy rain washes the good minerals out of the soil quickly, and the fields do not produce good crops for more than one or two years.

People who gather products to sell. No one knows how many small Indian villages there are in the Amazon Valley, for there are some that no white man has ever seen. In places that are fairly easy to reach, the way of life of the Indians has been changed because they trade with the white man.

The products of the tropical-forest regions are nearly all tree products. Brazil nuts are one. They grow on big trees that are scattered through the forest. A number of these nuts grow inside a shell that is like a big, hard ball. When the nuts are ripe, they fall to the ground. Nut gatherers pick them up and carry them to a canoe on the nearest stream. They paddle the canoe to a steamboat landing. Nearly everyone likes Brazil nuts. They are also a valuable source of oil. A much larger number of Brazil nuts could be sold, but instead many go to waste in the forest because they are too hard to find and get to a market. The gatherers do not go far into the forest.

You know that the world needs wood. The huge fast-growing tropical forest looks like a wonderful place to get lumber and pulpwood, but very few of the trees are cut to be sold. Like the nuts, they are too difficult to get to market, and so there is only a little lumbering carried on in a few places. The lumbermen usually cut only the most valuable trees, for they are the only ones whose price is high enough to make it worth-while. Some kinds of tropical forest trees have such beautiful wood that furniture makers will pay a high price for them.

Rubber was the first product shipped out of the Amazon Valley. Manaus was built in the heart of the Amazon Valley as a centre for the rubber trade, and many workers were brought there at great expense, but when people in other tropical countries planted rubber trees no one would buy rubber from the Amazon. Plantation rubber is

easier to collect than rubber from scattered trees in the forest, and therefore cheaper. Manufacturers who needed rubber bought plantation rubber instead of wild rubber from the Amazon.

Hard problems to solve. The Amazon Valley has wonderful resources. Many things that people need, like rubber, oil nuts, and valuable timber, grow there, but they cannot be used because it costs too much to take them to the people who might buy them.

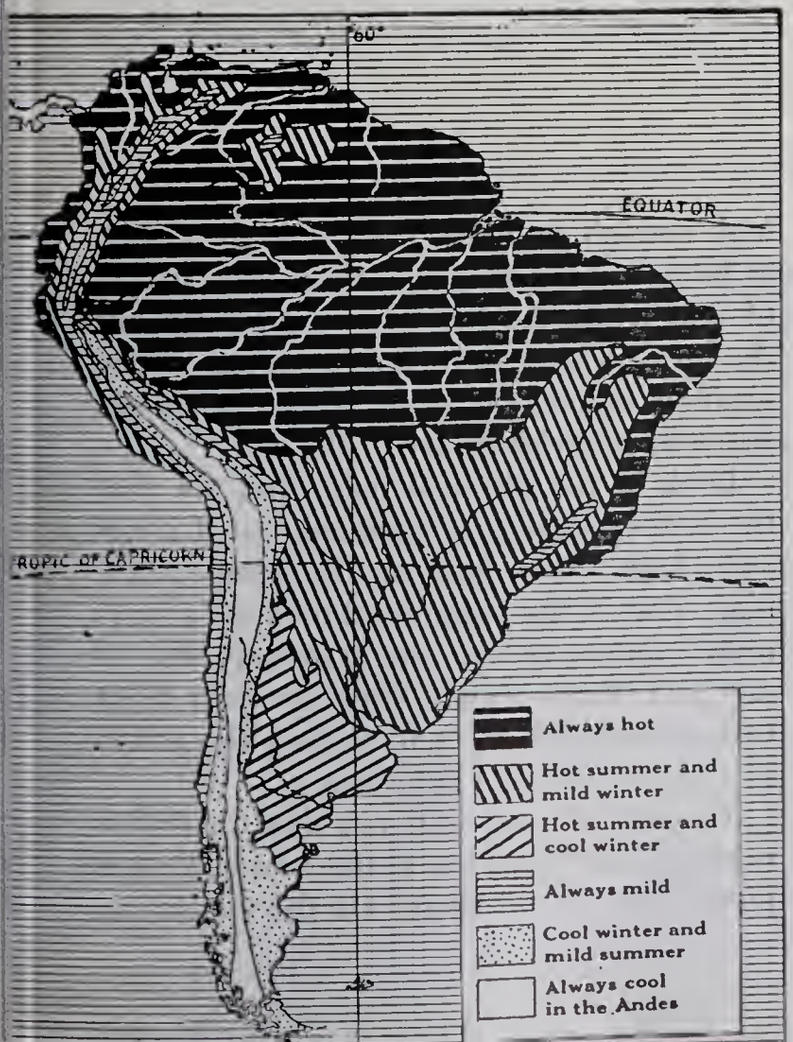
Transportation is one of the greatest problems in the Amazon Valley. The forest grows so fast and is so thick that it is almost impossible to keep long stretches of road cleared. There are many swamps and rivers and streams in the Amazon Valley and the rivers often flood. Roads and railways cannot be built in such a land. River transportation is good, but away from the rivers, travel is almost impossible. Men are working on the problem of the Amazon Valley. Perhaps some day you will read that they have found a way to make use of the jungle.

TROPICAL-FOREST FARMERS

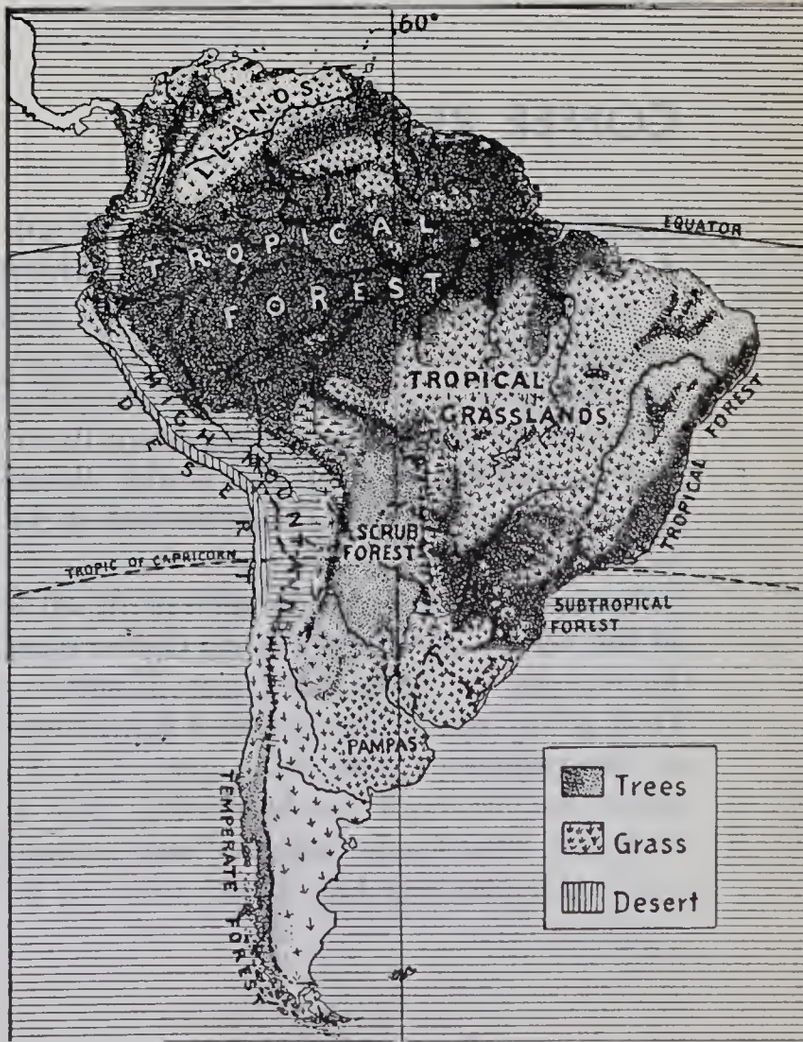
Along the Atlantic coast of Brazil is a narrow strip of tropical forest. Find it on the vegetation map on this page. If you compare this map with the physical map, you will find that the strip of tropical forest lies along the coastal lowland. A little way inland the land rises to a region of low mountains.

Your rainfall maps show you why the region of tropical forest reaches only to the eastern slopes of the mountains. The highland has a dry season in the winter, and part of it does not have much rain even in the summer. You know that tropical forests grow only where there is rain the year round.

The temperature regions of South America.



The vegetation regions of South America.





The coffee regions of South America.

In the Amazon Valley there is not much farming because of the transportation difficulty. Along the coast there is not the same problem because farmers can get their products to the seaports fairly easily. There are many little seaports along the coast and several larger ones. In this strip of tropical forest there are large plantations where the forest has been cleared. The plantations cover many acres of land and have many workers.

If you like the taste of chocolate, you have probably eaten something that came from this coastal region of Brazil. You know that chocolate is made from the seeds of the cacao tree. Many cacao trees grow in the part of South America we are studying now. Cacao trees also grow in other places in South America, though not in such large quantities. Farmers raise them in valleys in Venezuela, Colombia, and Ecuador, and on the eastern lowlands of Peru and Bolivia. Cacao trees can be grown only in a hot, wet climate. The picture on page 182 shows what a cacao tree looks like.

Farmers along the eastern coast of Brazil raise other crops as well. Sugar cane is an important one. They raise tobacco, cotton, rice, manioc, and other food crops. Many Brazilian farmers keep cattle and hogs as well.

COFFEE REGIONS

Coffee is one of the great crops of South America. The map on this page shows where it grows. Do you remember where you found coffee growing in Middle America? You found it in the highlands. More coffee grows in the low highlands of eastern Brazil than anywhere else in the world. Brazil exports more coffee than does the rest of the world combined.

You see that the coffee region of Brazil is at the very edge of the tropics. Coffee must have a year-round growing season, with no frost at any time. That is why it grows only in the tropics or near the tropics. But the trees cannot stand much weather that is very hot. That is why it grows best in tropical highlands. The highlands must not be high enough to be cold — just high enough to be not very hot. The bushes need plenty of rain while the berries are growing, but the farmers have to be able to count on dry weather at picking time. They spread out the coffee berries to dry in the sun.

Look at the physical map. You see that the coffee region is a highland, but it is not very high. Now look at the temperature map. Part of the region is shown as "always mild." Summers are not extremely hot in any part of the region. Many growers plant coffee under tall trees to protect the coffee plants from the hot sunshine.

The rainfall map tells you that the coffee region has a dry season in the winter. Which months are winter there? On the vegetation

map you see that most of the coffee region is tropical grassland. It is grassland instead of forest because of the dry season.

The second big coffee region is north of the equator, at the northern end of the Andes Mountains, in Colombia and Venezuela. The mountains are not very high there. Coffee grows in the valleys and on the slopes. Because of its altitude, the region is not too hot for coffee even though it is near the equator. There is a dry season there. During which months does it come? Coffee is harvested in the winter in the Brazil coffee region and in the Colombia and Venezuela coffee region. Is it being harvested at the same time in both regions?

A region of many people. Suppose we go back and find out a little more about the part of Brazil in which the coffee grows. Turn to the population map on pages 14-15. You see that this is one of the few regions of dense population in South America.

Now go back to the map on pages 174-175. There are two big cities in this region — Rio de Janeiro and São Paulo. Rio de Janeiro is the capital of Brazil and a very beautiful city. Most people shorten the name to Rio. Of course, Rio is a seaport, too, and a manufacturing city. São Paulo, in the centre of the coffee region, is a prosperous and busy city. Coffee, cotton, and its many manufacturing industries have made it so. It is the centre of the coffee industry, but Santos is the coffee port. All the coffee beans are brought down the steep *escarpment* from the plateau to this port and shipped to many countries.

In southeastern Brazil, you find a close network of railways. In the whole of northern South America you do not find any other region with so many railways. Nearly all of the railways lead toward the seaports. They were built so that people could send products to the seaports.

The region with the railway network is the farming region. Besides coffee, the farmers grow cotton and many food crops. It is also an industrial region. There are textile mills, factories to prepare foods, and all the kinds of factories needed in a region of many people. The only big steel mill in South America is at the edge of the highland, not far from Rio. The iron ore comes from mines near the steel mill, but coal must be brought a long way.

These children have a special holiday from school so that they can help with the coffee picking. The picture at the right shows coffee beans being washed. Later they will be dried in the sun.

Acme



Courtesy General Foods Corp.



A growing population. We cannot tell you why the region of dense population stops where it does. We cannot explain it by climate, soil, or vegetation, because this is a region that has not finished growing. Beyond the region of dense population there is good land that is not farmed and minerals that have not been mined. Settlers are going out beyond the region of dense population. The region is growing.

GRASSLANDS

Now we are going to leave tropical South America to study lands that are farther south. These lands are cooler and more like home. Remember that as you travel south from the equator the climate becomes cooler, just as it does when you travel north from the equator.

THE PAMPAS REGION

The region of dense population in Argentina and Uruguay is on the lowlands around a wide river mouth. At least the water is named Rio de la Plata, and *rio* is the Spanish word for river. But the Rio de la Plata is not exactly a river mouth; it is more like a long, narrow bay.

There are two very large cities on the Rio de la Plata. One is Buenos Aires, capital of Argentina. The other is Montevideo, capital of Uruguay. These two cities are the centres of a large farming and *stock*-raising region.

Most of the people who live there have Spanish ancestors and speak the Spanish language. Except for the language of the people you would not find this region very different from our prairies. The cowboys, or gauchos, do not dress in the same way as our cowboys, but they do the same kind of work.

This is an Argentine cowboy, a gaucho.



The farming and stock-raising region is grassland. Find it on the vegetation map, page 183. It is called the *Pampas*. Pampas is an Indian word that means plains without trees. This grassland covers part of the southern tip of Brazil, all of Uruguay, and a large area in Argentina.

Summers are hot everywhere in the Pampas region. Winters are not very cold anywhere, but they are cooler in the southern part of the region than they are in the northern part, of course. There is rain all year round, but there is just a little more during the summer than there is during the winter.

Animals and crops. The Pampas are very much like the southern grass region in the United States, and like that region it is wonderful country for stock-raising and farming.



Philip Gendreau

Grain elevators along the shore in Buenos Aires. Wheat is stored in these elevators until it can be loaded on ships.

Look at the cattle and sheep maps on page 188 first. It may surprise you to see how many cattle are raised, even in tropical South America. There are cattle on the tropical grassland called the llanos in northern South America. There are cattle in the valleys of the high Andes and on the farms of eastern Brazil, but the Pampas region has by far the most cattle.

Look at the sheep map. The Pampas region has more sheep than any other region in South America. There are more sheep than cattle in the drier grasslands. That is what you might expect, for you found the same situation in North America. In tropical South America, most of the sheep are in the highlands, where the weather is cool. Sheep are not tropical animals.

You know from the cattle and sheep maps that the Pampas must be the best part of South America for stock-raising. However, stock-raising is not all that this region is good for. Look at the wheat and corn maps on page 178. The Pampas are the great grain region of South America.

The Pampas region has a fairly dense farm population as well as two large cities and several fairly large ones, but the whole region of many people is not large. There is no big region of dense population nearby to which the farmers can send their produce. There are not enough people in Argentina to use all the meat and grain that the farmers have to sell.

Far away from the Pampas, in northwestern Europe, there is a region of dense population. If you want to know just how far away it is, measure the distance on a globe. Northwestern Europe has many big manufacturing cities and millions of city people. It has fine farm land, too, but the farmers there cannot raise enough food for all the people. The city people of Europe buy much of the food that Pampas farmers raise.

The picture on this page shows a long row of grain elevators in Buenos Aires. They stand along the water front where ships can tie up close to them to be loaded.

Meat is not quite so easy to ship. If the meat were just loaded onto the ships it would spoil. Buenos Aires, Montevideo, and other cities in this region have big meat-packing plants, where the meat is frozen hard. It is then loaded onto special refrigerator ships. If it were not for refrigeration, the Pampas farmers could not sell nearly as much meat.

We do not buy much food from the people of the Pampas because we raise exactly the same kinds of food ourselves. One Pampas crop is shipped to North America — flax. The Pampas farmers raise their flax for seed, not for fibres. We get linseed oil from the

seeds. It has many uses in manufacturing, but its greatest use is in paint.

You have read about the most important products of the Pampas. You see from your maps that grain and flax grow mostly in Argentina. Uruguay is mainly a stock-raising country.

Pampas farmers grow other crops that we have not named. Look at the grape map on page 178. Farmers raise citrus fruits in about the same places. Of course, they raise vegetables for themselves and for the people who live in the cities. They also supply the city people with milk and other dairy products. Remember that the Pampas are a region of general farming, with grain and livestock the most important products.

JUST EAST OF THE ANDES

Turn back to the vegetation map and put your finger on the Rio de la Plata. Move your finger westward until you come to the land just east of the Andes. Now you are in the northern part of the dry grassland. Turn north, into the region marked "*scrub forest.*" This lies mainly in Paraguay. You can see that there is not enough rain in the scrub-forest region to allow large trees to grow.

Neither the scrub forest nor the dry grassland sounds like a very good place to make a living, but many people do live there. The region has a winter dry season, but it also has a fair amount of rain in the summer. In the southern part of the scrub forest region, farmers grow cotton and other crops. They keep cattle and sheep, too.

The scrub-forest region is not the same everywhere. There are large trees in places, especially along the rivers, on land that is sometimes flooded. One kind of tree is called quebracho. It grows in many places in Paraguay and in the far-northern part of

A cattle map of South America.



A sheep map of South America.



Argentina. The wood of the quebracho tree is valuable for lumber because it is very hard and does not decay easily, but another quebracho product is more important to people in our own country. It is called quebracho extract and is made by boiling the wood. We use quebracho extract to tan leather.

Just east of the Andes, the streams that flow down from the mountains supply water for irrigation. Grapes are the most important crop of the irrigated land. Most of the grapes are made into wine. Mendoza is the centre of the grape and wine industry.

In the northern part of the region, which is the only part that is warm enough for it, farmers grow sugar cane. Tucumán is the centre of the sugar industry. It has many big sugar refineries.

PATAGONIA, A DRY GRASSLAND

Dry grassland covers all of the southern tip of South America from the Andes to the Atlantic. We have a special name for this region. We call it Patagonia.

Because the ocean is near, Patagonia does not have very cold winters or very hot summers. Patagonia is drier than much of the grassland in the same latitude in North America. At this latitude, north or south, the winds blow most often from the west. You found deserts and near deserts just east of the mountains in North America. Patagonia, too, is just east of a great mountain range.

If you look at your product maps again you will find that about the only thing people there can do to make a living is to raise sheep. Not many people live there because a rancher in Patagonia must have much land for each of his sheep.

The cool south. At the very southern tip of South America there is more rain. There is more grass and therefore more sheep. The land around Ushuaia, on the island of Tierra del Fuego, is fine sheep country. It is farther south than any other city in the world. The city has a freezing plant for meat. Ships go there for meat and wool. Punta Arenas, in Chile, is another port that ships out meat and wool. It stands on the shore of the Strait of Magellan. There the weather is always cool, strong winds blow, and there are many storms.

CHILE

Now you are going to cross to the western side of the Andes. In all of southern South America there is only one country west of the Andes. The country is long, but very narrow. At its widest part, it is only about 200 miles wide. It extends from the Pacific Ocean to the top of the Andes.

This country, Chile, has many kinds of climate because it extends through so many degrees of latitude. Match regions in Chile with the parts of the west coast of North America that are in the same latitude.

You find that northern Chile is in the same latitude as the peninsula of Lower California, in Mexico. The peninsula of Lower California is a very dry, bare desert. So is northern Chile. The desert reaches from a little south of the Tropic of Capricorn almost to the equator. In this latitude the prevailing winds are from the east.

The densely populated region of Chile matches the Los Angeles region in latitude. You will find that the two regions are alike in many ways.

Southern Chile matches the western coast of North America from northern California to Alaska. In both regions the wind usually blows from the west. Both regions have heavy rainfall because the winds bring moisture from the Pacific and there are high



Courtesy Standard Oil Co.

This is a copper, lead, and zinc mine high in the Andes. Mining is done at altitudes between 14,000 and 16,000 feet.

mountains a little way from the coast. Both regions have a *temperate climate;* the winters are not very cold and the summers are not very hot.

The two regions, one in North America and the other in South America, have much the same surface and climate. In both, trees are the natural vegetation. In North America, the forest is made up of fine cone-bearing trees. The forests in southern Chile have both cone-bearing and broadleaf trees.

Southern Chile is a region of sparse population. The forests contain trees for lumber, but they are a long way from markets. There has never been much lumbering there.

Your vegetation map of South America has the words "temperate forest" beside southern Chile. Sometimes we use the word temperate to describe the lands between the Tropic of Capricorn and the Antarctic Circle and between the Tropic of Cancer and the Arctic Circle.

Like southern California. Only the central part of Chile, the part in the same latitude as Los Angeles, has a dense population. The two big cities there are Santiago and Valparáiso. Most of the people live in a wide valley between the Andes on the east and lower coast ranges to the west. Temperatures are usually pleasant the year round. More rain falls in the winter than in the summer, but there is not much rain at any time of year. However, there is water for irrigation from streams that flow down from the Andes.

The central valley of Chile is fine farming country. Farmers there grow crops that are very much like the crops of southern California. For one example look at the grape map, page 178. Most of the grapes are made into wine or raisins, but many are used as fresh fruit. You may very well have seen grapes and other fruit from Chile in stores in our own country during the winter. We could use much more southern hemisphere fruit if it did not have to be transported so far.

Oranges, figs, and other fruits grow well in Chile. However, not as many are grown there as in California because the farmers do not have such good markets for their fruit.

The farmers of Chile grow wheat. They keep sheep and cattle on land that could be used for fruit and vegetables. Fruit and vegetables would bring the farmer more money if he could find people to buy them.

Valuable desert. Chilean farmers sell food to people who live in the desert and mountains of northern Chile. People live in this dry desert because of the valuable minerals there. One of the biggest copper mines in the world is at Chuquicamata.

In other parts of the desert, people work in nitrate mines. Nitrate is a fertilizer. Farmers in other countries buy nitrate from Chile to make their crops grow better. Nitrates dissolve in water and so are only found where it is very dry.

PEOPLE OF THE HIGH MOUNTAINS

COOL LANDS AT THE EQUATOR

Put your finger on the equator at the mouth of the Amazon River and move it westward along the equator until you come to Quito. Quito, the capital of Ecuador, is only fifteen miles from the equator. Along the equator you expect to find a tropical forest region and a moist, hot, rainy climate, but the tropical forests grow only in the equatorial lowlands. Quito is high in the Andes mountains.

Some people think that all the land along the equator is always hot, but a visit to Quito would show you that this is not true. Quito never has hot weather. It never has cold weather, either. On the temperature map it is labelled "always mild."

Though places on the equator are not always hot, they do have a special climate. For one thing they have no summer or winter. The weather is just about the same all year round. That is true everywhere along the equator. In lowlands along the equator, the weather is always hot. In highlands along the equator the weather is always mild or always cool. At Quito the weather is never hot, and the growing season lasts the year round.

At your home, summer days are longer than winter days. Along the equator, days are always the same length. The sun always rises at six o'clock in the morning and it always sets at six o'clock in the evening. That is one thing you would be sure to notice if you stayed a year in Quito.

In Quito there is usually a shower of rain almost every day, but the city does not receive as much rain as the lowlands to the east. In our country, highlands have more

You are looking down on Quito from a mountainside. The city is in a valley more than 9000 feet in altitude.

Le Mont from Ewing Galloway



rain than lowlands. This is not true of tropical South America because near the equator the wind usually blows from the east. Quito is only a little more than 100 miles from the Pacific Ocean, but the winds that bring moisture come from the Atlantic Ocean 2000 miles away. The air loses most of its moisture before it reaches the mountains.

People of Quito. Quito is a very old city. It was an Indian city long before the Spaniards came to South America. Most of the city people are now of Spanish descent, and the Indians live outside the city on farms. Most of the city houses are white, with roofs of red tile. Some of the houses are made of *adobe* bricks. Some are made of stone.

Quito is in a valley between high mountains. Only the valley can be farmed. It is divided into fields of wheat, barley, and potatoes. Some of the fields are on very steep slopes at the side of the valley.

Naturally, if we go to the country we shall see more Indians because most of the farmers are Indians. They are interesting to watch because of their colorful clothes. The men wear knee-length trousers. That was the kind of trousers the early Spanish settlers wore. Now the Spanish people of

An early morning street scene in a small village near Cuzco. The bundles are barley and will be taken to the central market in Cuzco to be sold.

Courtesy Panagra



South America dress like people in our country or Europe. Instead of a coat, an Indian wears a poncho. A poncho is like a warm wool blanket with a slit in the middle. To put it on, a man just slips his head through the slit. It keeps him warm and keeps off the rain. Most ponchos are made of brightly-colored wool. Red is a favorite color.

Women wear shawls instead of ponchos. Their shawls and their wide skirts are made of brightly-colored wool, too. Often the women spin the wool into yarn and weave the cloth themselves.

A WIDE PLATEAU AND NARROW COASTAL PLAIN

Now we are going to look at the highland farther south. Put your finger on Quito and move it southward along the highest part of the Andes. After you have gone a little way into Peru, you come to a long stretch of land that is above 10,000 feet. The red color that stands for the highest land goes on and on. You can measure hundreds of miles on the map without getting out of this very high region. As you continue south, the region of highland becomes wider. From 15° south latitude to 20° south latitude, the highland is from 200 to 300 miles wide.

We are going to visit that wide part of the highland. We shall find that it is not all rugged mountains. There, at more than 10,000 feet above sea level, there is a wide plateau. South Americans call it the *Altiplano,* which is Spanish for high plain. Mountain ridges rise above the plateau, but there is much level land, too.

Looking down on the coast. We could drive to the Altiplano on the Pan American Highway, but suppose we fly to save time. As we fly we can study the land we pass over.

Go back to the vegetation map on page 183 to find out what we shall see. Along the coast of Ecuador, you find a strip of tropical forest. This seems natural, because you expect to find tropical forests in tropical lowlands. But now look a little farther south along the coast. Less than 5° from the equator the forest ends. From our plane, we see that the land begins to look dry, and before long we are looking down on the driest, barest desert in the world. The desert along the coast of Peru is part of the same desert that you saw in northern Chile. This region has hardly any rain at all. A place there may have a hard shower one day and may not have another drop of rain for six or seven years.

There are some towns and cities along the coast of this desert. They are seaports for the huge mines in the Andes. Ships bring supplies for the mines and take away ore or metal.

The desert is not completely bare, even though it has hardly any rain. Wherever a stream crosses the desert there is an irrigated strip. When you fly along this coast, the valleys look like stripes of green across the brown desert. Farmers use every bit of the irrigated land for crops of cotton, sugar cane, grain, vegetables, and fruit.

Highland Indians. In Cuzco, which was the capital of a great Indian empire in the Andes, the empire of the Inca, and in all the highland region, we see a great many Indians. They remind us of the Indian farmers we saw around Quito. They wear the same bright-colored ponchos and shawls.

On the way to Lake Titicaca, the highest big lake in the world, we meet a man with several llamas. There is a picture of llamas on page 177. They carry all kinds of loads over mountain trails that are too narrow and steep for trucks. We think of mules and donkeys as being very sure-footed animals, but llamas can go where even a donkey cannot go safely. They carry bundles of cloth or wool, bags of food, loads of firewood — anything that needs to be carried. They even carry ore from some of the mines high in the mountains.



Fenno Jacobs from Three Lions

You are looking across a farm on the high, chilly Altiplano. The farm buildings are made of adobe.

The Indians use only the biggest and strongest llamas as work animals. They keep the rest in flocks, like flocks of sheep. Llamas have fine, thick wool, which the Indians clip as farmers in our country clip wool from sheep.

The Indian farmers keep two other kinds of animals that live only in South America — alpacas and guanacos. These animals look much like llamas, but they are smaller and woollier. Farmers keep them for wool and meat, but do not use them as work animals.

Long before the Spaniards came, the Indians were making beautiful cloth from the wool of these animals. In our own country, we can buy clothing made of llama, alpaca, or guanaco wool. The wool is very soft and warm. Usually we have to pay a high price for clothes made of it, but South American Indians wear it every day.

The Indians in the South American highlands raised a crop that no other Indians grew. It was a food that you probably eat almost every day — potatoes. Spaniards took some of the potatoes to Europe because they saw what a valuable food potatoes would be for Europeans. Europeans brought them back across the Atlantic to North America.

One of our best vegetables, tomatoes, came from these Indians too. The Indians also raised many different kinds of corn and beans. Sweet potatoes, cacao, and several kinds of squashes and pumpkins also grew first in South America.

MINERALS AND MANUFACTURING

MANY DIFFERENT KINDS OF MINERALS

We have mentioned minerals in a good many places. South Americans themselves do not know all about their mineral resources, because large regions of their continent have never been explored for minerals.

The Andes are the greatest mineral region. Long before the Spaniards came, the Indians mined gold, silver, and copper in the Andes. There are still gold and silver mines in the Andes, but there are also other kinds of mines, such as copper, that seem more important to us. On page 190, you read about a copper mine in northern

Chile. Peru and Bolivia have copper mines, too. Most of the copper is exported to the United States.

Bolivia has another metal that is even more important to us than copper. This metal is tin, which we need for many things, but especially for making tin cans. We have to buy our tin from other countries because we have no tin mines of our own. There are not many places from which we can buy tin.

We do not hear very much about British Guiana, Surinam, and French Guiana. The population is sparse. They are in a tropical-forest region that has only a few plantations and small farms where people raise sugar cane, cacao, and other tropical crops. But one product from there is very important to us. Surinam and British Guiana have bauxite mines. Aluminum manufacturers in our country get much ore from there.

Chile has iron mines, but it has very little coal. In spite of all its iron ore, Chile has only a very small iron and steel industry. Steel manufacturers in the United States import iron ore from Chile. Ships take the ore north along the coast of South America, through the Panama Canal, and north along the coast of North America to steel mills at seaports. One steel mill that gets Chilean ore is just outside Baltimore.

Brazil has many mines and many kinds of mines. The only big steel mill in South America is not far from Rio. As you know, coal must be brought a long way to the steel mills because South America does not have much coal. At least, no coal has been found as yet. It may be there. People are still exploring for mineral resources there, and new mines are being started every year.

South America does have oil — much oil. Find Lake Maracaibo, in Venezuela, on your map. There have been oil wells around Lake Maracaibo for many years. Some of the oil derricks stand right in the water of the lake. Oil from the Venezuelan wells is refined on the Dutch island of Curaçao.

Scientists now think that there may be a great oil region all along the eastern side

São Paulo, Brazil. Does it look like you imagined a South American city would?

Courtesy Caterpillar Tractor Co.





Courtesy Standard Oil Co.

This is an oil derrick near Lake Maracaibo in Venezuela. You can see another derrick in the background.

of the Andes. The oil field near Mendoza, in Argentina, is one of the spots where scientists have already found oil.

If South America has great resources of oil, the oil will help to make up for the lack of coal. Both are fuels. South America also has much undeveloped water power in some spots. In many industries electricity can take the place of fuel.

INDUSTRIALIZATION BEGINS IN SOUTH AMERICA

Up until the present, the countries of South America have not been industrial countries. They have produced food and raw materials, but it has been factories in North America and Europe that have used the raw materials. South America has had to import most of the manufactured goods that it used.

As you know, many foods and raw materials cannot be stored or shipped without a little preparation. South America has factories that do this kind of work. Meat-packing and freezing plants, sawmills, mills to take the oil out of palm nuts and other kinds of nuts, and sugar refineries are examples of the type of factory to be found in South America. In Paraguay and northern Argentina there are factories that make quebracho extract.

The big cities have factories of all kinds, but South America does not have many big cities. All of its really big cities are near the coast, where they are within easy reach of ocean transportation. Land transportation has always been difficult because of the thick forests, the mountains, and the big rivers.

South America is growing. Its population and its industries are growing. The people are building roads and railways. They are flying to places that are hard to reach by other kinds of transportation.

If you study South America again in a few years, you will learn different things about it. Some of the things you have read here will no longer be true. You will probably see newsreels, and newspaper and magazine articles that tell of events in South America. Look for changes in the way people do things, for new transportation routes, new mines, new towns. South America is growing, and you can watch it grow.

THE GEOGRAPHY WORKSHOP

I. PRODUCTS FROM SOUTH AMERICA

Look in the stores for South American products. You might start with Brazil nuts and coffee. You can be almost sure they came from South America, and they are easy to find. You may find canned fish from South America. They probably came from Chile. The label on the can will tell you where they came from.

Do you remember the alpacas, guanacos, and llamas that live in the mountains? Where will you look for products we get from these animals?

You will find other things that may have come from South America. One example is the aluminum in aluminum pans. We get aluminum ore from South America, but the pan has no label to say that it was made from South American aluminum. Chocolate is another example of something that may have come from South America. See how many examples of such things you can find.

II. PLANTS FROM SOUTH AMERICA

In this chapter you have read about a number of farm plants that came from South America. Make a list of them. How many grow near your home? How many do you know?

Perhaps you would like to make a collection of the plants or of their products or of pictures of the plants. Maybe you would like to add a few flowers or flower pictures to your collection. Here are flowers that we got from South America: petunia, scarlet sage, nasturtium, verbena, and fuchsia.

This road is being built through the mountains in Venezuela. From this picture you can see how difficult it is to build roads in this country.

Courtesy Caterpillar Tractor Co.




EUROPE
Scale of Miles
0 50 100 200 300 400
National Capitals
Other Capitals
Other Cities
Shading from green through yellow, brown, and red indicates increase in altitude. Figures show approximate altitude in feet for corresponding color.
10,000 ft.
5,000 ft.
2,000 ft.
1,000 ft.
500 ft.
30°
20°
10°
0°
10°
Arctic Circle
Reykjavik
ICELAND
Norwegian Sea
FAEROE ISLANDS (Den.)
SHETLAND ISLANDS (Br.)
NORWAY
Oslo
Glasgow
IRELAND
Dublin
UNITED KINGDOM
Liverpool
London
North Sea
DENMARK
Copenhagen
Hamburg
NETHERLANDS
Amsterdam
Rhine
Berlin
Oder
River
GERMANY
POLAND
BELGIUM
Brussels
Bonn
River
ORE MTS.
Prague
CZECHOSLOVAKIA
Atlantic Ocean
English Channel
Seine
River
Paris
Loire
River
Danube
River
Munich
Vienna
AUSTRIA
HUNGARY
Bay of Biscay
Bordeaux
FRANCE
Saône
R.
Bern
SWITZERLAND
Lyon
Milan
ALPS
Venice
Po R.
Rhône
Marseille
YUGOSLAVIA
DINARIC ALPS
Adriatic Sea
CANTABRIAN MTS.
PYRENEES
Douro R.
Ebro R.
PORTUGAL
Lisbon
Tagus R.
SPAIN
Madrid
Barcelona
CORSICA (Fr.)
APENNINES
Rome
ITALY
Guadiana R.
Guadalquivir R.
BALEARIC ISLANDS (Sp.)
SARDINIA (It.)
Mediterranean Sea
Strait of Gibraltar
Rabat
Casablanca
Algiers
SICILY (It.)
Tunis
MALTA (Br.)
ATLAS MOUNTAINS
AFRICA
Tripoli
Bengas
40°
30°
10°
West Longitude
0°
East Longitude
10°


North Cape
30°
40°
50°
60°
70°
Arctic Circle
Murmansk
Pechora River
URAL MOUNTAINS
Ob River
Irtysh River
Omsk
Arkhangelsk
N. Dvina R.
Lake Onega
Lake Ladoga
Helsinki
Leningrad
Volga River
Gorki
Sverdlovsk
Ishim River
Magnitogorsk
Moscow
Daugava R.
SOVIET UNION
Ural River
Aral Sea
Warsaw
Kiev
Dnepr River
Kharkov
Don River
Stalingrad
Volga River
Astrakhan
Caspian Sea
Dnepropetrovsk
Rostov
Dnestr River
CARPATHIANS
ROMANIA
TRANSYLVANIAN ALPS
Odessa
CAUCASUS MOUNTAINS
Mt. Elbrus
Baku
Bucharest
Danube River
Black Sea
BULGARIA
Sofia
Istanbul
Ankara
TURKEY
Asia Minor
Tehran
Aegean Sea
GREECE
Izmir
Athens
TAURUS MTS.
Tigris
SYRIA
Baghdad
Euphrates River
IRAQ
IRAN
RHODES (Gr.)
CYPRUS (Br.)
LEBANON
Beirut
Damascus
CRETE (Gr.)
ISRAEL
Jerusalem
Amman
JORDAN
KUWAIT
Persian Gulf
SAUDI ARABIA
Alexandria
Cairo
30°
40°
50°
North Latitude
199



INDUSTRIAL WESTERN EUROPE

Canadians have many close ties with Europe. We are part of the British Commonwealth, whose head is the monarch of the United Kingdom; our government is modelled on that of the United Kingdom; and our way of life resembles that of Europe, for most Canadians are descendants of people from Britain or France, and many are descended from people of the other European countries.

Nor are we the only country that has such ties. All over the world, nations have been influenced to some degree by Europe. In the days of the explorers, the earth had far fewer people than it has now. Explorers from Europe found three large, sparsely populated continents — North America, South America, and Australia. Some areas in Africa and Asia also had a rather sparse population.

European settlers began to move into these almost empty lands. They filled empty spaces in the Americas, Australia, South Africa, and many scattered islands. Many Europeans even moved into regions already densely populated, where they became traders or plantation managers. Today, many millions of Europeans and their descendants live outside of Europe. Thus European civilization was transplanted to three whole continents and to parts of two others. Ways of living changed somewhat in the

new environments, but they remained European ways of living.

Industrial western Europe, though small in area, is a very important part of the world. There are many reasons why this is so.

The beginnings of factories. Modern industry makes our lives what they are today. This is something else that we owe to industrial western Europe, for it was there that modern industry first started. In England men invented machines that enabled work to be done more quickly and more cheaply than when it was done by hand. James Watt developed the steam engine, which meant that machinery that was too big to be worked by water power could now be used and that factories did not have to be near falling water, because they could use fuel. Because of these inventions Britain was able to produce more goods and cheaper goods than any other country in the world. From England modern industrial methods spread to the other countries of western Europe and to North America. Other countries, such as the Soviet Union, South America, India, and many more, are now, in their turn, becoming industrialized. Through industries and trade, as well as through colonies, western Europe has had a great effect upon the world.

WHAT WE CAN LEARN FROM MAPS

LOCATING INDUSTRIAL WESTERN EUROPE

Industrial western Europe, as it is defined in this book, is made up of the British Isles, the Netherlands, Belgium, Luxembourg, the Rhine Valley of western Germany, and all of France except the southern border and the valley of the Rhône. Great Britain is made up of England, Wales, and Scotland. Ireland is made up of two parts, Northern Ireland and the Republic of Ireland.

On an outline map of Europe, show the boundary of each of the above areas in red. Label each of the areas and color them lightly. Find the Rhine River on the map on page 206. The Rhine River flows out of the Lake of Constance, along the northern boundary of Switzerland, then northward and westward until it enters the sea at Rotterdam. Draw the river in blue on the outline map.

HIGHLANDS AND LOWLANDS

1. If you turn to the physical-political map on pages 198-199, you will find that industrial western Europe includes part of the Great Lowland Plain that extends across the northern part of Europe. What does the map tell you about the altitude of this region in western Europe? In what direction does the Great Lowland Plain slope in industrial western Europe? You will be able to answer this question by tracing the rivers in the direction in which they flow.

2. Use the physical-political map to find the areas that are more than 1000 feet high. What do the color symbols on this map show you about the different altitudes of these highlands? What is the average altitude of most of them? On your outline map show by means of slanting lines the part

A woman making lace. She puts in pins and then winds the thread on the bobbins around them. See how many bobbins and pins she has to use.

Courtesy Belgian Consulate





A map of western European coal and iron fields.

of each country that is more than 1000 feet high. Which country of industrial western Europe has no highlands?

The Alps are the highest mountains in Europe. Find them on the map. They help to form the boundary of France. Draw a brown line on your map where they form a part of the boundary of France. Other mountains and rough, hilly land border France, but only the Alps and the Pyrenees are barriers to land transportation. Show the location of the Pyrenees on your map. These mountains are crossed in a few places by modern roads and railways.

3. Look again at the highlands and lowlands of the British Isles. You can see that the highlands are chiefly in Scotland, in Wales, and in the northern part of England. When you see these areas on the map, think of high, grass-covered hills with patches of trailing evergreens known as purple heather. Think of narrow, winding roads and stone fences, rushing streams, and now and then a lake or a swamp.

4. On the map, find the rivers of western Europe. You have already located the Rhine River on your map. It has been deepened, widened, and straightened in some places to make it better for transportation.

One of the best-known rivers in France is the Seine. In what direction does it flow? Into what body of water does it empty? What great city is on it? What seaport is near its mouth?

CLIMATE AND WAYS OF LIVING

1. On a map of the world trace the parallel of 45° north latitude. Locate Montreal and Bordeaux, France, near this parallel. Note that most of industrial western Europe is north of this parallel. Near the parallel of 50° north latitude locate London, England, Paris, France, and Winnipeg, Manitoba. How far north does Scotland extend? Trace this parallel across Canada. The parallel of 50° north latitude may be said to pass through the middle of industrial western Europe. This study will help you see that most of industrial western Europe lies farther north than most of industrial Canada.

Although industrial western Europe is in high middle latitudes, its winter temperatures are not as low as the winter temperatures in the parts of Canada that are in the same latitudes. The following paragraph will tell you why. You may be able to explain the reasons yourself from what you remember about the temperatures in British Columbia.

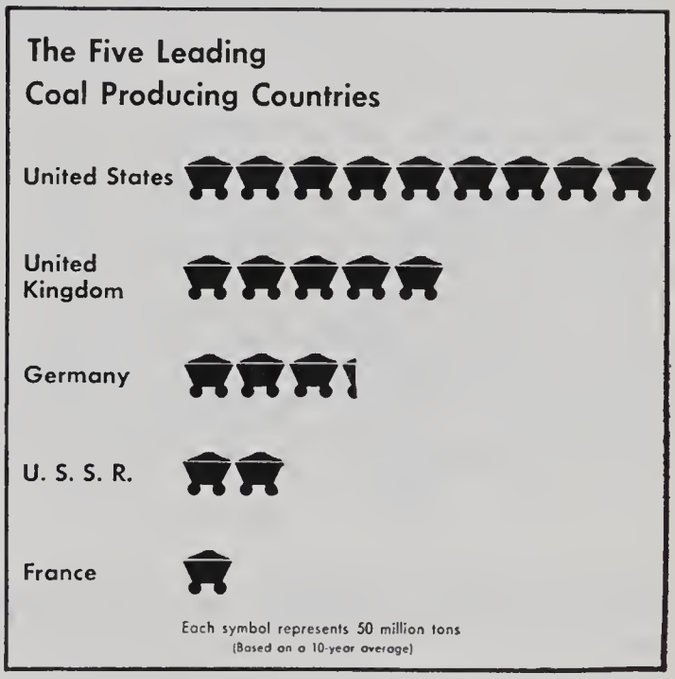
Water warms up more slowly in summer and cools off more slowly in winter than does the land. At this latitude, the Atlantic Ocean is warmed by the northerly flow of the *Gulf*

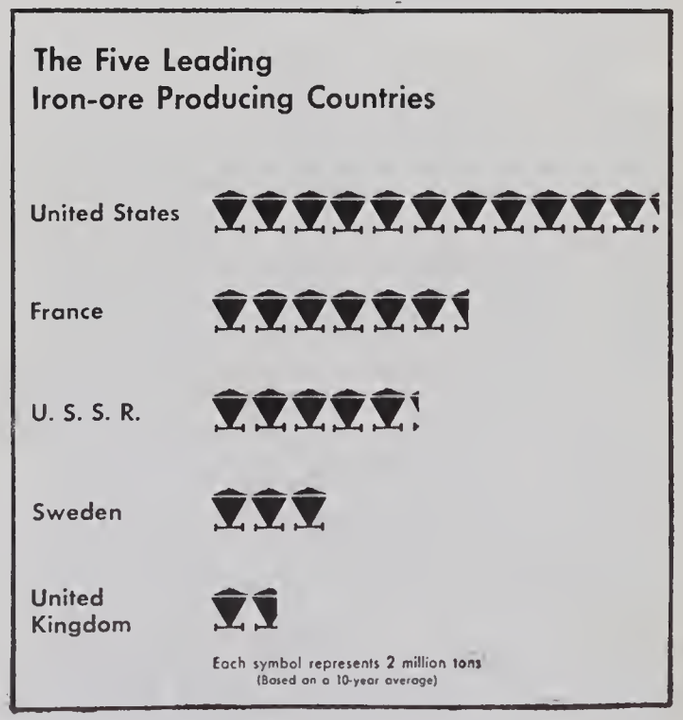
Stream; this is a vast river of warmer water moving out of the Gulf of Mexico and flowing to the Seandinavian Peninsula. In winter the air over the oeean is not as eold as the air over thc land. When winds blow from the ocean to the land, the air over the land becomes warm. A change in wind direetion brings about a change in temperature. When the wind blows from the north or northeast in the winter, the temperature drops. The air has come from the cold lands farther north. These winds arc most effeetive in the parts of industrial wcstern Europe that are on the eontinent.

2. You have seen that winter temperatures in industrial western Europe are not so low as might be expeeted, beeause the winds blow from the oeean most of the time. In summer, the tempcratures are not so high, even though the summer days are long. Lower summer temperatures are also caused by winds from the oeean. The summers of industrial western Europc are described as cool, even though at times winds from the east bring warmer, drier weather. You ean see that differenees between the winter and summer temperatures of western Europe are not as great as in most sections of Canada. In some plaees, sueh as Ireland, grass remains green all winter and woollen clothing is needed the ycar round.

3. The growing season is the frost-frce period of the year. It begins with the last frost in the spring and ends with the first frost in the fall. What differenee would you expeet to find in the length of the growing season as you go farther and farther north from the equator? Since wcstern Europe lies far north, would you expect it to have a short or a long growing scason? Turn to the map on pages 10-11 to ehcek your answer. Most of the St. Lawrence Valley region in Canada has a growing season from four to six months long. Has most of western Europe a longer or shorter growing season? Why is this?

4. Use the map on pages 8-9 to find out how mueh rain this part of Europe has. Most crops grow wherc therc is a rainfall of at least 20 inehes a year. Only a few crops need more than 40 inches of rainfall a year. Why does industrial western Europe have enough rain? Dull, gray skies are common in industrial western Europe. In London it rains on about 164 days eaeh year, but the rains are often light. We use the word drizzle to describe them. As in western British Columbia, these rains are more frequent in winter than in summer. Sinee the air is eool both in winter and in summer,





the ground does not dry rapidly. For this reason 20 inches of rainfall does more good to crops in this region than a greater rainfall does in hot regions where the ground dries out between rains.

READING VARIOUS MAPS

The most interesting study of a region usually has to do with the people who live in it. Turn back to the map on pages 14-15 to find what it tells about the distribution of people in industrial western Europe. You will find areas of very dense population in western Europe. One area covers most of southern England. On the mainland of Europe, a large area of dense population extends southeastward across the Netherlands, Belgium, and France into Germany. Do you wonder why so many people live in this area? Let us see what maps can tell us.

1. On the population map, the boundary lines that separate one country from another are difficult to trace. Do you think that *political boundaries,* as these are commonly called, would make any difference in the density of population? For example, does the boundary between Belgium and France separate two areas that differ in density of population? Are areas densely populated because they are in certain countries, or because of conditions that enable people to make a good living?

2. Try to imagine where the area of densest population in western Europe would be if it were placed on the physical-political map on pages 198-199. For each of the areas of dense population, try to decide whether the land is high or low. In general, then, would you say that most of the densely populated areas are in lowlands or in highlands?

3. Turn now to the map on pages 8-9. How much rainfall is there in the thickly settled area of western Europe? Has any of the area of dense population an annual rainfall that is too light for crops?

4. Find western Europe on the map on pages 10-11. Is the growing season long enough for many kinds of crops?

MANUFACTURING IN INDUSTRIAL WESTERN EUROPE

WHY IS THIS REGION INDUSTRIALIZED?

There must be reasons why industrial western Europe has so many factories, why France is industrialized and Spain is not, why England has many factory towns while Ireland remains a country of farms. Part of the answer is to be found on the map on page 202. The industrialized countries are those that have deposits of iron ore and coal.

In an industrialized nation, coal is needed to generate power to run the machines and for fuel in the *blast furnaces.* Hydro-electric power may take the place of coal in many industries, but coal is still necessary in refining metals. Iron and steel are essential for making machinery, building large factories, and as raw materials for many industries, from automobile manufacturing to the making of nuts and bolts.

If you look at the map on page 202 and the tables on page 203, you will see that Great Britain, France, Belgium, and Germany have large deposits of at least one of these two minerals and are close to deposits of whichever one they lack. One of the richest iron fields in the world is in the district of Lorraine in France. As for coal, it is almost as if one great coal field extended eastward from northern France across Belgium and the Netherlands into the Rhine Valley. Good coal is found in abundance in Great Britain, and some iron as well. Moreover, in western Europe are found ample supplies of limestone, which is also necessary for making iron and steel. Actually, the



Courtesy Government of the Grand Duchy of Luxembourg

Large steel mills are a typical sight in industrial western Europe. This mill is located in Luxembourg, one of the smallest countries in the world, in a region where there are many iron mines and factories.

whole region is one industrial unit and must work as one unit even though it is divided among several countries. All countries must co-operate and exchange raw materials if a large iron and steel industry is to exist, because each country must import some vital material from another country.

COAL, IRON, AND STEEL

Today we live in a world of iron and steel, and things that are made of them. Men must have steel to make automobiles and trucks. They must have steel to build great skyscrapers and strong bridges. They must have steel to make knives, tools, and hundreds of small articles that we use every day. It is very difficult to be a powerful nation without iron and steel.

The steel industry, perhaps more than any other industry, has supported the dense population of industrial western Europe, especially in southern England, northern France, eastern Belgium, and the Rhine Valley. If it were not for the mining of iron and coal, the refining of iron and steel, and the industries that depend upon these metals, millions, indeed most, of the people of these regions would be without the means of earning a living. Even the farmers would have a hard time, for no one would have money to buy their products.

Steel districts in the British Isles. Britain is one of the greatest coal and iron and steel producers in industrial western Europe. The diagrams on page 203 will show you how the United Kingdom, which includes England, Scotland, Wales, and Northern Ireland, ranks with other important countries of the world in iron and coal production. The top diagram shows how much iron is mined in Britain. Because she imports iron ore, her iron and steel production is greater than the bottom diagram might lead you to expect. From what countries of Europe might Britain import iron? The map and diagram suggest two possible reasons why Great Britain ships coal to many European countries.

Britain has several important iron and steel centres. It is easy to find them on the map on page 202. One great iron- and steel-manufacturing district lies in central England near the city of Birmingham. This part of England is known as the "black country." The many dirty, smoky manufacturing towns gave it its name. There iron and coal are found close together, as you see. In the Birmingham region today, huge factories make locomotives, automobiles, hardware, and so many small articles that we cannot name them all.

Sheffield, to the north, is another iron and steel region. It is well known for the high



A map of industrial western Eurape. The Ruhr should be where Essen is but there was na raom on the map to put it there.

quality of the cutlery it produces. Cutlery is a word that means such things as knives, forks, and spoons.

Another great British steel district is in southern Wales, where abundant deposits of high-grade coal are mined along the sides of deep, narrow valleys. On the map on this page, find the seaports of Cardiff and Swansea in southern Wales. They ship coal to other countries, even to Canada, much of it to be used as fuel for steamships. However, this export of coal is decreasing. Both cities use large quantities of coal in their own factories as well, to smelt the various ores brought to them by sea. Iron is imported from Spain and Sweden, copper is brought from Chile and Spain, tin from Malaya, nickel from Canada, and zinc from Australia.

Newcastle and Glasgow also have large deposits of coal and therefore an iron and steel industry. Much of this iron and steel is used in building ships.

Big steel mills in little Belgium. On a map of Europe, Belgium appears as a small country, but its boundary lines, short as they are, enclose deposits of coal, iron, and zinc. These minerals have enabled small Belgium to become an important industrial nation. She is also close enough to other deposits to be able to import extra minerals. Iron is brought from France and Luxembourg, coal of better quality for smelting is brought from Germany, and copper is supplied from mines in the Belgian Congo, in Africa.

Find the Meuse River on the map on this page. Blast furnaces, *foundries*, and machine shops crowd the Meuse area. Metal works, glass factories, and chemical works are examples of *heavy manufactures* which developed there. Heavy manufactures are those that require large quantities of raw materials and fuel, and whose products are bulky and heavy.

Lorraine iron and steel district. In Lorraine, in France, lies one of the world's greatest iron-mining regions. The rich iron deposits extend north and east from there across the borders of Belgium and Luxembourg. Find Lorraine on the map. It lies close to the border between France and Germany and has belonged to both these countries at one time or other. The desire to own this important district has more than once encouraged these two countries to go to war with each other.

France does not have a great supply of coal, but fortunately the Lorraine iron field is within easy reach of the coal beds that lie to the north, chiefly in northern France and western Germany. Moreover, an abundance of limestone is quarried nearby. Thus the Lorraine district, like the Birmingham region in England and the Meuse Valley in Belgium, is a place where the raw materials and fuel that are needed for making iron and steel are brought together. Big iron and steel works are found in Nancy, in Metz, and in many towns and villages in that locality. Lorraine also exports iron to the coal regions from which she gets coal, so there are iron and steel factories there too.

The steelmaking Rhineland. The Rhine Valley of Germany is one of the great industrial areas of the world, and the reason for this is coal. The Ruhr River, which flows into the Rhine, cuts its valley through the richest coal field in Europe. This coal is the basis of the great iron and steel industry that developed in the Ruhr Valley and in the Rhine Valley.

Though the Ruhr Valley is only about fifty miles across, it has a population of six million people and can produce almost as much steel as the whole of Britain. Forests of chimneys rise above the land. Many people outside the valley also depend upon it. When the industries of the Ruhr were destroyed during the Second World War, merchants in Rotterdam, Amsterdam, Antwerp, miners in France and Sweden, and industries in Switzerland and Italy all suffered.

Another rich coal field is found where the rolling hills of the Rhineland meet the plain of the Lorraine area. It takes its name from the Saar River and is called the Saar Territory.

You can easily see that the Ruhr and Saar supply the people of the Rhineland with plenty of coal. But there is little that they can do with coal alone. They need iron as well.

Theirs is the opposite problem to that of the Lorraine district, which has iron, but not enough coal. These regions solve their problem by exchanging iron and coal to everyone's benefit. Actually, the Ruhr, the Saar, and Lorraine are one region, even though they are shared by different countries. Factories and blast furnaces cluster together, and countries depend upon one another for the materials they need.

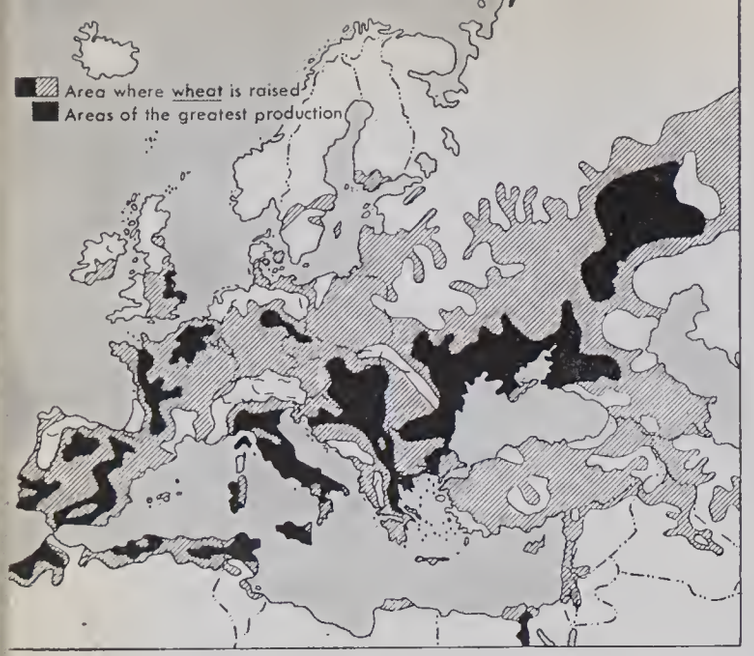
Some famous shipbuilding centres. The people of western Europe depend upon sea trade for part of their food supply and for many of the raw materials for their factories. They need many ships to carry these things.

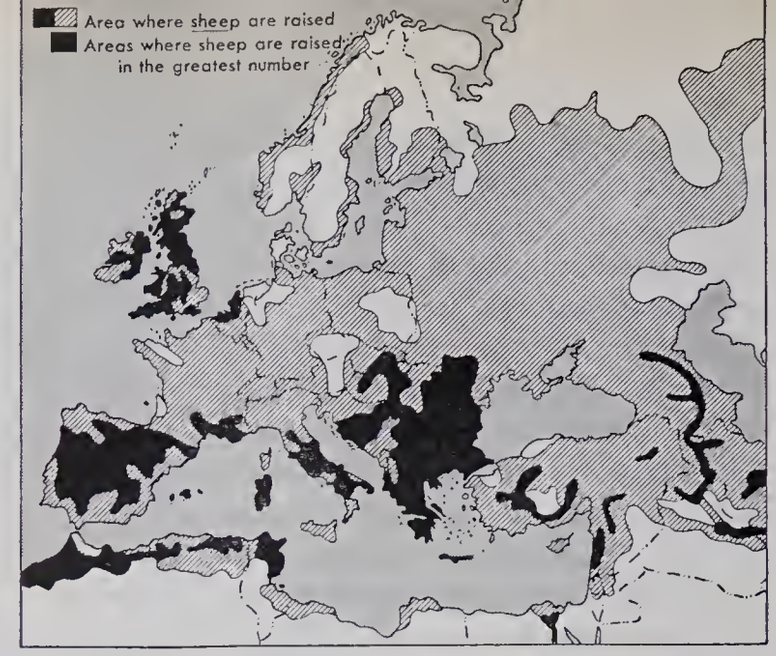
As steel is the most important raw material in the shipbuilding industry, you will usually find that ships are built in an iron and steel area. However, many other things are needed as well, and it is not an easy job to assemble all the necessary materials and articles, both large and small, in one place. Some locations are better than others for shipbuilding. The necessary steel mills and factories must be near; transportation must be good; and the shipyards must be beside deep water.

A heavy hydraulic press is forging a large pressure vessel in a British steel mill.

Courtesy United Kingdom Information Services







Maps showing where wheat and sheep are raised in Europe.

Find the city of Glasgow, in Scotland. It is situated on the Clyde River. Glasgow contains blast furnaces and many kinds of factories. Railways connect the city with other industrial districts. It is an excellent location for shipyards. Such great ships as the famous *Queen Mary* and *Queen Elizabeth* were launched on the Clyde River. Shipbuilding has brought many people to this city. As a result, Glasgow has become an industrial and commercial city of more than a million people. Its shipyards alone employ thousands of workers. Its shops make machinery, not only for ships, but for mills and factories all over the world. The ships carry them to their destinations.

There are many other shipbuilding centres, such as South Shields and Sunderland, near Newcastle in England, and Belfast, on the coast of Northern Ireland. What advantages for shipbuilding do the maps suggest that these places have?

Shipyards are found in other parts of western Europe. There are suitable harbors along the coast of the Netherlands, and even though most of the steel used in the Netherlands must be imported from other countries, shipbuilding is an important industry.

Find the Loire River in western France on your map. There are two important shipbuilding cities, Nantes and St. Nazaire, on this river. In northern France, near the English Channel, find the city of Caen. There, too, you will find busy shipyards.

TEXTILE INDUSTRY IN WESTERN EUROPE

Much of the land in western Europe that is too rough and hilly to be cultivated is left in pasture, and large numbers of sheep are raised there. The map on this page shows that the greatest number of sheep are to be found in the British Isles and in some of the rougher and drier parts of France. These sheep produce raw material for the woollen industry.

Another raw material for textile mills is flax. On some lands that are too cool and wet for grain to grow, west European farmers raise flax. It has long been an important crop in Northern Ireland, in northern France, and in Belgium.

Wool. Because Britain raises so many sheep, the woollen industry has long been very important there. British woollens and British china are two things that Americans like to buy when they come to Canada.

Today, the woollen industry of Britain is centred largely around the cities of Leeds and Bradford. Why do these two cities have large woollen mills? On the map you will see that they are near the rough, hilly land

of the Pennines. In the early days, the streams flowing from the hills provided water power to run the looms and other machines. The soft water in the streams was, and still is, used for scouring the greasy wool and for bleaching and dyeing the woollen cloth. When steam engines took the place of water wheels, Leeds and Bradford were able to remain centres of woollen manufacturing because they were fortunate enough to be near coal fields.

In southern England, in Scotland, and in parts of Ireland, wool of good quality is produced, but not in large enough quantities to keep the woollen cloth factories supplied. Today, most of the wool is imported from countries of the southern hemisphere, chiefly from Argentina, Uruguay, New Zealand, and Australia.

If you were to visit Lille and Roubaix in France, Ghent (Gand) in Belgium, and many other cities in industrial western Europe, you would find that they, too, have large woollen mills. All these woollen-manufacturing centres are near coal fields, as you can see by looking at the maps on pages 202 and 206.

One woollen-manufacturing centre in northeastern France is the city of Rheims. Rheims lies in a section of France known as Champagne. Much of the Champagne district is too dry for raising crops, because the water seeps away through the porous rock which underlies much of that region, and the grass that does grow there is too short for cattle. The sheep that graze on the chalky lands in the Champagne region supply wool for the mills at Rheims and other nearby manufacturing towns in the area.

Making cotton goods in western Europe. In England, the manufacture of cotton goods is more important now than that of woollen goods, even though all the cotton has to be imported, because in England the summers are too cool and the growing season is too short for cotton to grow and ripen. The British cotton industry centres around the city of Manchester, just west of the Pennine Hills. Do you know why?

In the first place, Manchester is conveniently situated for receiving cotton sent from the United States and other places. It is connected with the *estuary* of the Mersey River by a canal. Thus cotton can be brought directly to Manchester by boat, though actually many ships stop at Liverpool and unload their cotton there.

In the second place, the westerly winds blowing in from the ocean bring moist air.

Sheep grazing in France.

Courtesy French Government Tourist Office



This girl is tending a machine in a British textile factory.

Courtesy United Kingdom Information Services



Moist air helps to prevent the cotton threads from becoming dry and breaking easily. Nowadays, the amount of moisture in the air in cotton mills can be controlled mechanically, but this was not possible when the industry was started.

In the third place, Manchester can obtain coal from deposits nearby. The map on page 202 shows coal fields on both sides of the Pennines. The coal field on the east side supplies power for the woollen mills at Leeds and Bradford, while the one on the west supplies power for the Manchester cotton mills.

In the fourth place, as you have already learned, the streams of the Pennine Chain furnish soft water especially suitable for washing and bleaching cloth.

In eastern France, between the cities of Nancy and Mulhouse, there is an important cotton- and woollen-manufacturing region. This region too has swift streams and a nearby supply of coal.

Linen mills. Linen is made from flax, which grows well in the cool, moist elimate of western Europe. A long time ago, flax grown in northeastern Ireland made the manufacture of linen important there. Gradually, Irish linen gained the reputation of being the finest in the world.

Some of the best flax in the world is grown on the plains of *Flanders* in northern France and Belgium. Lace, embroidery, and other kinds of linen goods made in Belgium and northern France are still world famous.

FARMING AND FISHING IN WESTERN EUROPE

If your study of western Europe were to end now, you might think that it is only an industrial region. The work of millions of people is connected with manufacturing, but millions of other people are engaged in agriculture, for western Europe is a fertile region as well as one that is rich in minerals.

Wheatlands in western Europe. Fertile soil, about 25 inches of well distributed rainfall, winters that are not severely cold, and plenty of summer sunshine — these are the conditions favorable to high yields of winter wheat. These conditions are found in much of industrial western Europe. You can see on the map on page 208 how true this is. In some places, however, the land is too mountainous or the fields are too stony for wheat. In other places the summers are too wet, and there is not enough sunshine for wheat to ripen and mature.

In the British Isles there is only one region where wheat grows well. The map on page 208 shows that this good wheat region lies in east-central England. Turn back to the map on pages 8-9 and find the areas that have the lightest rainfall. Notice that most of the wheat is grown in the driest lands, while in the parts that have the heaviest rainfall almost no wheat is raised. In this small area of England it is not possible to raise enough wheat to supply bread for all the British people. England has to import almost four times as much wheat as she grows. Many Canadian farmers make their living by supplying wheat to Britain.

There is one region, in northern France, in which wheat grows especially well. Turn to the physical-political map and find an area of low-lying land in the valley of the Seine River. Because it is shaped somewhat like a shallow washbasin, and because the city of Paris is near its centre, the region is called the Paris Basin. It is one of the finest farming areas in the world. The soil is so rich that it sometimes produces enough wheat to supply bread for all of France. Find the Paris Basin on the map on pages 198-199. France grows almost the same amount of wheat as Canada.

In the Netherlands and Belgium very little land is used for wheat, but yields of wheat on each acre are high — nearly forty bushels per acre. In Canada the average yield per acre is about sixteen bushels. The high yields in the Low Countries are due mainly to intensive farming methods used. The farmers use a lot of fertilizer and put a great deal of labor into each acre. The farmers do not make a higher profit from their land than do the farmers in our country who use extensive farming methods, because the cost of fertilizers and the extra labor put the costs up. Intensive agriculture is worthwhile only in regions of dense population and little land.



Courtesy United Kingdom Information Services

A catch of herring is being hauled in. The white object in the water is one of the buoys holding up the net. The small white objects are seagulls.

Cool-climate crops. Summers that are too cool and rainy for raising wheat are good for growing certain other crops. Thus in Ireland, Scotland, and eastern England, more land is used for oats than for any other grain. You can see this clearly by comparing the maps on pages 208, 244, 256, and 323.

Two other grain crops, rye and barley, will ripen in a short, cool growing season. Both can be raised on poor soils. More rye and barley than wheat is grown in the highlands of the Central Plateau and western France, in the hilly land of eastern Belgium, and in the highlands of Scotland. This is an example of how the natural environment limits the choice of crops that the farmers of a region can grow well and profitably.

Potatoes are a good crop for crowded lands because they supply much food from small patches of ground. They are not as nourishing as wheat, but about ten times as many bushels can be grown on each acre. Many uses have been found for potatoes. They are food for men and feed for livestock. In factories, they are made into flour, starch, and many other products. Potatoes, then, offer one solution to the problem of feeding the vast number of people living in the densely populated lands of industrial western Europe. They were first introduced to Europe by the Spaniards, who had found them growing on the Andean plateau. They did not do well in the warm, dry climate of Spain, but grew so well in cool, rainy Ireland that we now call them Irish potatoes.

Fishing banks. The ocean and the seas bordering western Europe contain many fish. As the map on pages 198-199 shows, the North Sea, one of the world's great fishing grounds, borders Great Britain, the Netherlands, and Belgium, and is easily reached from France.

Why is the North Sea good for fishing? Turn to the physical-political map and notice the depth of the water. The floor of this sea was once a part of the continent of Europe. Some time in the long-distant past this part of the continent sank and ocean waters covered the land and became the North Sea. In most places the water in the North Sea is only about a hundred feet deep, and in some places it is less than fifty feet. The shallow areas, which are called banks, are the best fishing grounds. In such places the sunlight reaches the sea bottom, and some kinds of plant life grow there. Banks are feeding grounds for fish, especially cod, halibut, and mackerel.

The Dogger Bank in the North Sea has long been one of the world's most famous fishing grounds. Turn to the map on page

206 and locate this famous fishing ground. Next, find where the Dogger Bank is on the map on pages 198-199. About how far is the centre of the Dogger Bank from land? The Dogger Bank is much like the Grand Banks off the coast of Newfoundland.

Some fishermen are usually found among any people who live beside the sea, but in some places fishing is much more important than in others. In western Europe the fishing communities are found in Brittany in France, in the coastal lands of the Netherlands, in eastern Scotland, and in southern England.

There are many quaint fishing villages along the coast of industrial western Europe even today, where fishing is carried on in much the same manner as in the past centuries. Changes come slowly in such places. Fishing is also carried on as a large-scale industry. Men or companies invest thousands of dollars in large boats, piers, warehouses, refrigerators, and modern fishing devices. Such equipment can be seen at the fishing docks of many large ports.

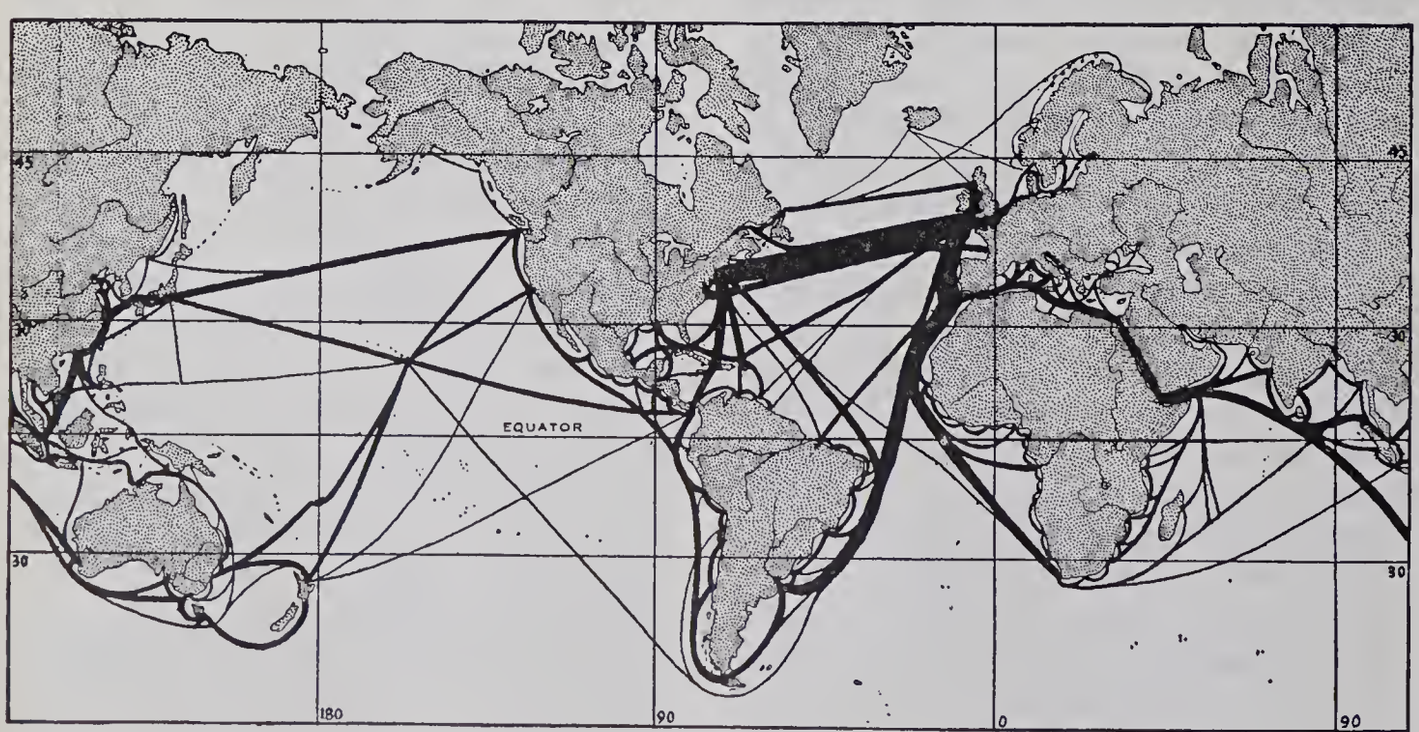
The price of fish is usually low compared with meat, and the poorer people of many countries depend to a large extent upon fish because it is cheap and nourishing. Thus many fishermen in industrial western Europe are able to make their living in this difficult and adventurous work.

INDUSTRIAL EUROPE AND WORLD TRADE

A busy industrial region — one of the world's most densely populated regions — a region of many farmers and fishermen; yes, a region of millions of workers doing almost every kind of work you can name! All these things are true of western Europe. Partly because of these activities, its favorable location, and other natural conditions, industrial western Europe became a centre of world trade. No other area in the world of equal size has such a large trade.

Why has the trade of western Europe been so great? Perhaps you can answer

Ocean trade routes connecting other parts of the world with industrial western Europe.





Philip Gendreau

Roads from all parts of England meet at the Tower Bridge. Ocean ships can sail this far up the Thames River. The central part of the bridge between the Towers can be raised to let river boats pass through.

this question by asking yourself some other questions. Since industrial western Europe is so crowded and has so many people living in big cities, from where do people obtain food? Since the factories have turned out more goods than even the crowded lands of western Europe can use, where will they sell their products? Where will they find the raw materials they need, but do not have?

Regions that have too much of one product may trade or exchange that product with other regions for the things they need. The surplus goods that are not used by western Europe are shipped to markets all over the world. The ships return with imports of food, raw materials, and some types of manufactured goods. The amount of goods moving in and out of western Europe is very great. When imports of these essential goods are cut off for even a few months, the people of industrial western Europe suffer. If their factories cannot sell their surpluses, millions of workers are thrown out of work. The people of this region are dependent upon markets in all parts of the world, just as we in Canada are.

How the natural environment helps trade. No place in industrial western Europe is more than a few hundred miles from the sea. As a result, manufacturers and businessmen in any part of industrial western Europe have only a short haul to a seaport for their goods. This reduces the cost of transportation.

Rivers have also helped trade by reducing transportation costs in western Europe. Most of the rivers in this part of Europe flow through plains and are wide and deep so that river boats can travel far inland on them. To this system of natural waterways, the enterprising people have added canals to join the rivers.

The coastline of western Europe has many good natural harbors which have also been of great importance in making it a centre of world trade. Estuaries and bays were formed when the lower ends of the river valleys were drowned by the sinking of the land. An estuary is a large mouth of a river. On these inlets some of the greatest seaports of western Europe stand. London, for example, is located on the estuary of the Thames River. Find three other ports that are on estuaries. How far apart are they? Does this help to explain why many of the *trade routes* shown on the map on page 212 meet in this area?

SEAPORTS IN WESTERN EUROPE

In any list of the world's greatest seaports, one would be sure to find London, Liverpool, Rotterdam, and Antwerp (Antwerpen). Why are these places great ports?

The port of London. London is the capital of the United Kingdom, but it is much more than that. It is the centre of the British Commonwealth and Empire. It is one of the world's largest and most important ports, and it is the greatest manufacturing city in Great Britain. London, with its population of eight and a half million and its long and distinguished history is known for many things.

The estuary of the Thames opens into the North Sea; thus London is within easy reach of such great trading countries as Norway, Denmark, Germany, the Netherlands, and France. This was especially important in the days before there was much shipping on the Atlantic Ocean.

Once the British Empire was founded, goods coming from and going to all parts of the world passed through the port of London, increasing its already large import and export trade.

Though London has no large deposits of coal and iron, it is England's greatest manufacturing city. The reasons are not hard to find. Raw materials can reach London easily by both land and sea. This is especially important for manufacturers whose products require a number of different raw materials. The millions of people who live in London provide a large enough market to attract manufacturers of every kind.

Liverpool and its harbor. Next to London, Liverpool is the most important seaport in England. The estuary of the Mersey on which it stands has been improved for use as a harbor. Docks have been built for seven miles along the east bank of the estuary. Cold-storage warehouses and special warehouses for tobacco, wool, cotton, and grain are near the docks. Railways tie this important port to all parts of Britain. One reason why so many ships land there is that they know the accommodation is good.

Cargoes from countries all over the world are landed at Liverpool, and much of Britain's exports leave from there. However, most of its business is in serving the cotton-manufacturing region around Manchester and the famous iron- and steel-manufacturing centre of Birmingham. Liverpool did not become really important until the cotton industry grew. Then the large amounts of raw cotton coming into the port and the cotton cloth being exported made it a very busy port indeed.

Rotterdam, gateway to the Rhine. In the small country of the Netherlands is Rotterdam, one of the great seaports of the world. Your map will help you to see some reasons for the importance of Rotterdam. In the first place, it is on the North Sea. A country with a coastline on the North Sea has somewhat the same advantage as does a store on the main street of a city.

In the second place, Rotterdam is a gateway to the Rhine Valley. This river forms a natural highway from the North Sea into the heart of Europe. Because of its location

at thc mouth of the Rhinc, Rotterdam carries on a large *transit trade*. This means that it handles more than Nethcrlands goods; it is used by other eountries as well. Vast quantities of goods that arc bound for Germany and other eountries in central Europe are unloaded at Rotterdam. Ships also eome to Rotterdam to take on eargoes of goods that eome down the Rhinc Valley to be exported. There, large quantities of goods, espeeially English and Gcrman goods, are transferred from river barges to ocean ships, or viee versa.

A large part of Rotterdam's trade eomes from tropieal islands, ehiefly islands near southeastern Asia that were formerly Duteh colonies. This trade, whieh started when these islands belonged to the Netherlands, continues now that they are independent, because the pattern has been establishcd. From thesc far-off tropical isles, ships bring coconuts, palm nuts, and othcr seeds that eontain oil used for making soap, candles, and margarine, a substitute for butter. Other ships bring eaeao beans, used for making coeoa and ehoeolate. Still other ships bring rubber.

Antwerp, a great Belgian port. On the map on page 206, find the eity of Antwerp. This eity is on the Sehcldt River, about fifty miles from its mouth. The river has been dredged so that large oeean vessels ean reaeh the city; canals eonnect Antwerp with the Seine, the Meusc, and the Rhine rivers. Thus, this scaport, like Rotterdam, serves as a gateway to the Rhine Valley, and to all of Germany and Switzerland. The growth of Antwerp was due in part to its favorable loeation near the mouth of the Rhine. It shares with Rotterdam the large business eonnected with the handling of exports from Germany and other trading countries of eentral Europe.

The port of Rotterdam. Notice the large number of boats. Many of them are barges, which sail only on the rivers. You can also find many sea-going vessels.

Courtesy Netherlands Consulate



LIVING IN THE BRITISH ISLES

Although the United Kingdom is a small country, it once ruled an empire that included one-quarter of the land of the world, and today, though its empire is smaller, Britain is still one of the world's most important nations and one of the great trading countries. How did a country as small as the United Kingdom come to occupy so prominant a place in world affairs?

THE COUNTRYSIDE OF BRITAIN

If you fly northward across Great Britain, you first look down upon green pastures and fields of grain. You see many cities and villages. These plains form the heart of rural England and contain some fine agricultural land. However, even there, there are wide *downs* and *moors* on which one may walk for miles without finding a single fenced field or house.

The man is applying "figures" on the edge of a plate. If you go to a china store you may be able to find a plate with this kind of pattern on it.

Courtesy United Kingdom Information Services



After you pass Birmingham the scenery becomes more rugged, for you are flying over the Pennine Chain, which splits England down the middle. The mountains are not very high, and there are still farms to be seen in some of the valleys and in the plains to the east and west of the Pennines. You will see signs of mines, which you know must supply coal and iron. Here and there the green fields and hills are blackened by smoke and soot. The countryside is dotted with blazing furnaces and smoking factories. Rivers and canals, airports and harbors, railway tracks and roads form an interesting pattern.

By the time you reach the north of England the highlands stretch right across England. After you cross the Cheviot Hills, which separate England and Scotland, the southern *uplands* of Scotland appear below. Sheep graze on the grassy hillsides and in the valleys are farms. When you fly over the lowlands of Scotland you will see more signs of people than you have for some time. The majority of Scots live there, for the best farm lands are there and the biggest deposits of minerals. Northward still are the wild and mountainous Highlands of Scotland.

Wales, to the west of England, and the southwest peninsula of England are also mountainous. The Cambrians, as the Welsh mountains are called, are higher and more rugged than the Pennines, but even they are not very lofty.

The farms of England. The warm, moist climate and the fertile soil make the plains of England an exceptionally fine farming country. Oats, wheat, barley, and rye are the principal grain crops. Most farms are devoted to mixed farming and stock-raising. Immense quantities of garden vegetables are raised in all parts of the country to sup-



Courtesy United Kingdom Information Services

This is a typical scene of English countryside. Notice the hedges separating the fields and the sheep grazing on the hillside.

ply the demands of the cities and towns. The scarcity of land leads the English farmer to till his soil much more carefully than does the Canadian farmer. In England, the yield per acre is about twice that in Canada.

More than twice as much land, however, is devoted to pasture as to crops. The abundance of rain at all seasons makes the finest of pasturage. Sheep graze in the more rugged country.

Despite the richness of the land, Great Britain produces only one-third of the food needed by her population.

BRITAIN, A TRADING NATION

The United Kingdom is less than one-quarter the size of Ontario, but its population is about ten times that of Ontario. To be able to support such a large population Britain must trade. Most of Britain's population depend upon industry for a living. Britain must import many of her raw materials, and more important still, she must sell her products abroad, for she manufactures more than she can use herself. You already know that Britain imports most of the food that her people eat and she must sell manufactured goods to pay for the food. If it were not for her trade, Britain's population would be very, very much smaller than it is. Many things have helped Great Britain to become a great trading nation.

A good location. An island location encourages people to use ships and to engage in sea trade. This is especially true when all parts of the island are near the sea, and when the natural resources are not sufficient to support the population. In the British Isles, no spot is more than seventy miles from the sea.

As the map shows, many inlets extend from the sea deep into the land, and many islands fringe the coast. This means many good harbors. It means havens where ships may anchor and be safe from ocean storms.

Great Britain has other advantages. The Atlantic Ocean brings it within easy reach of all the commercial countries in the Americas, and the North Sea brings it near the most progressive commercial countries of Europe.



Courtesy United Kingdom Information Services

A country scene in Northern Ireland.

Many things to sell. Her favorable location would be of little use to Britain if she had nothing to sell to the world in return for the food and raw materials she needs. In so small an area as the British Isles, one might expect to find few natural resources. Such is not the case. Of course, no large area of land is devoted to crops, but the mineral wealth is great. In coal production Great Britain ranks high among the great producers of the world. Rich deposits near the sea help her to export large quantities of coal cheaply. In return for coal, Britain has been able to import goods that she needs.

Britain is known for the excellence of her textiles and pottery as well as for her coal and the products of her iron and steel factories. You have already learned about the cotton and woollen cloth industries. The pottery industry centres in Stoke-on-Trent, at the southwest corner of the Pennines. It was largely through the efforts of Josiah Wedgwood, who greatly improved the methods of making and decorating pottery, that English pottery has become famous for its fine quality and beauty. The clay is now brought from the south of England, but because the kilns, the coal, and the skilled workmen are in Stoke-on-Trent the industry has not been moved closer to where the clay is.

Great Britain was the first country in the world to be industrialized. For many years she was the only country that had factory-made goods to sell. These were cheaper and often better than hand-made goods. Naturally, many countries wanted to trade with her. Many other countries now use factory methods, but Great Britain still exports many manufactured goods. Her deposits of iron and coal, the skill of her workmen, and the contacts she made in the past enable her to remain a trading nation, but she is finding it more difficult now to export enough to pay for the goods she imports.

It was largely owing to trade that Britain's population grew, her wealth increased, she acquired a wide-flung empire, and became a great sea power — at one time the greatest sea power.

AN ISLAND WITH TWO COUNTRIES

A few years ago the Irish Free State left the United Kingdom and the British Commonwealth to become a completely independent republic called Ireland. Six counties in the northeast remained united with Britain and did not become part of the Irish Free State. Though the island is only a little larger than New Brunswick, it is today ruled by two governments.

Ireland has no important coal deposits. This fact helps to explain its lack of industries and its small population. The island of Ireland is only a little larger than Scotland and has fewer people. Turn to the map on pages 14-15 and see how sparsely settled Ireland is compared to England.

Irish farms. Though we are studying Ireland in the section on industrial western Europe, Ireland is chiefly a land of farmers and has few industries. Its main crops are potatoes, oats, and barley. As you have learned, Ireland is too cool and wet for wheat, but just right for these other crops.

The moist and marshy pastures of the Irish lowlands are excellent for cattle. The farmers take milk to creameries where the cream is separated and made into butter.

The skim milk is then taken back to the farms and fed to hogs. Irish bacon has long been famous for its fine quality. The hogs are raised chiefly on skim milk, oats, and barley, and their bacon is leaner than that of hogs fattened on corn.

Most of the bacon and butter is shipped to the great manufacturing cities of England. Chickens are kept on nearly every Irish farm, and many eggs are also shipped to England.

Irish seaports. Belfast is situated on a wide, deep, and sheltered harbor and is the sea gateway to all of Northern Ireland. It is also an important shipbuilding centre, and most of its other industries are connected with shipbuilding. Belfast has factories that make steel ropes or cables, and steel masts, and mills that make sailcloth for the ships that still use sails.

Turn to the map and find Dublin (Baile Atha Cliath). Dublin, the capital of the Republic of Ireland, is a busy seaport, partly because it lies across the Irish Sea from the densely populated English cotton-manufacturing district around Manchester. The millions of people who live and work in the Manchester district need all the butter and cheese and bacon that can be produced on the plains of Ireland. Every day, trucks bring these products to Dublin for shipment to England.



Courtesy French Government Tourist Office

Paris. Notre Dame Cathedral is on the left. The river is the Seine.

LIVING IN FRANCE

In your study of western Europe, you have already learned a great many things about France. You know that it is important for both agriculture and industry. This suggests that France has natural advantages for farming, manufacturing, and trading.

Sea and land boundaries. If you do not remember how France is situated, look once more at the map. Northward, it faces the English Channel and the Strait of Dover, waterways that link the Atlantic Ocean and the North Sea; westward, it looks across the Atlantic to the Americas; southward, the Mediterranean Sea forms a link with Africa and Asia. This location, so fortunate from a commercial point of view, helped France to become one of the trading countries of the world.

The French carry on a large trade with French lands scattered over the earth. Trade is heavy in coffee, sugar, and rubber. From the products, would you say that these outlying parts of France are in low or middle latitudes?

A varied land. The physical-political map shows that France has several kinds of land. One vast plain extends from the Pyrenees in the south to the Belgian boundary in the north. Beyond the French border the plain stretches far into Russia, forming a natural and easy trade route right across Europe. Look at the map on pages 198-199 and find the Great Lowland Plain stretching across Europe.

France has several areas of highland. Find the Central Plateau on the map on page

206 and then on the map on pages 198-199. The physical-political map shows that in some places the Central Plateau has an altitude of more than 5000 feet. Decayed volcanic rocks have given some parts of the plateau a fertile soil. Some *volcanic soils* are very fertile.

The Ardennes Plateau extends from Belgium into northeastern France, and the Vosges Mountains, with their forested slopes, help to separate France from the Rhine Valley. In northwestern France are the uplands of Brittany.

These rugged lands are used in many ways. Trees grown on the steep slopes furnish a variety of products. Apple orchards add to the beauty of the highlands of northwestern France. The apples are made into cider. In the Central Plateau, chestnut and oak trees are raised for nuts. The chestnuts are ground into flour, and the acorns are fed to pigs. The forests of the Vosges supply lumber and fuel. Many of the steep mountain slopes are *terraced* for grapes or are used for pasturing herds of sheep and goats. Hydro-electric power is generated by swiftly flowing streams.

Across the Rhône Valley from the Central Plateau are the French Alps. There you will find the highest mountains in France and some of the most beautiful scenery in all Europe. The mountain tops are covered with snow the year round. Glaciers extend down steep slopes to lower valleys.

A nation of many farmers. Agriculture is the chief occupation of the French people. Many of those who do not actually work on farms handle or distribute the products raised by farmers. There must be workers to grind the flour, to make the sugar, to prepare the meat, and to do all the many other things that are necessary. Most of the land of France is devoted to crops and to pastures. The farms are small, averaging about twenty to forty acres. The average

This picture shows a typical small French farm. The farm has probably belonged to the same family for many generations.

Courtesy French Press and Information Service



farm in Canada is more than twelve times as large. By using intensive farming methods the French farmers manage to make a living from their small farms.

France produces a great variety of farm products because it has a variety of lands and climates. Sugar beets and flax are suited to the cool plains of the north, wheat thrives on the rich soil of the Paris Basin, and oats and rye do well in the cool, wet highlands of the Central Plateau. Dairy cows are raised on farms where grass grows well. The dry, chalky lands of the Champagne region are excellent for grazing sheep, and both sheep and goats can live on the Central Plateau, where the vegetation is scanty. The summers in the Garonne Valley of western France are long enough and hot enough for corn to ripen, and grapes grow on the sunny slopes of river valleys. More wine is exported from the port of Bordeaux than from any other port in the world.

French industries. Northern France has large supplies of iron because it contains the Lorraine iron field, which is one of the richest in the world. Other iron deposits are scattered through the Central Plateau and Normandy. Largely because of the iron mines, the northeast of France is the most highly industrialized part of the country.

France does not have a large supply of coal. She has some rich deposits in the north, which she shares with Belgium, and she has smaller coal fields in the Central Plateau region. Several manufacturing cities are located near small coal fields in the Central Plateau. Le Creusot manufactures guns, steel rails, and many other heavy iron and steel products. The factories in these *urban* areas manufacture not only iron and steel, but a variety of other products as well. Clermont-Ferrand, for example, manufactures large quantities of rubber goods. All through France there are factories for processing farm products. But the chief industrial sections are near the Belgian and Ruhr coal fields.

In thinking about manufacturing in France, one should keep in mind that the French are an artistic and a skilful people. They are especially good in making glassware, porcelain, furniture, and textiles.

A famous European capital. In the heart of a fertile farming country, near the junction of the Seine and Marne rivers, is the city of Paris. It lies on the easiest land route from the Mediterranean Sea to the English Channel. This route leads from the seacoast up the Rhône-Saône Valley to the city of Dijon. From there a low pass leads to the Seine Valley, and the route continues down that valley to the English Channel. If you trace this route on the map, you will see that it passes through Paris.

Paris is the centre of transportation in France. All routes meet there. Railways extend from the city in every direction; they not only lead to all parts of France but also connect with railways of every country of Europe as well. Canals join the Seine with the Loire, the Saône, and the Rhine. So it is that all parts of France are joined to Paris by land and by water. Many slow-moving barges and swift-moving trains arrive and leave every day. Moreover, Paris is an important centre for airplane travel. Air lines lead from there to most parts of Europe, Africa, and the Americas.

Paris' position as a centre of trade and transportation helps to explain why it has also become the greatest manufacturing centre in France. Its factories make a great variety of products: machinery, automobiles, furniture, chinaware, jewellery, soap, and gloves. For a long time the most famous industry in Paris has been the designing and making of clothing. So skilful and so artistic are the French in designing hats and gowns for women, that buyers from all parts of the world go there to study the latest styles in clothing. As a result, Paris has become a famous fashion centre. It sets the style for clothes that are worn in many countries besides France.

THE LOW COUNTRIES

Crowded countries. Both the Netherlands and Belgium are very small countries. Turn to the Reference Table at the back of this book and compare the sizes and populations of these two countries with those of France. You can see that it would take eight pairs of countries like the Netherlands and Belgium to cover France.

Yet, in these small countries, we find the densest population in all Europe. If all the people were distributed evenly over the land, there would be about 800 people on each square mile in the Netherlands and Belgium. How do such small countries manage to support such a large population? Try to answer this question after you have read this chapter.

Making land. The Netherlands does not contain much land, but there is more land there now than there used to be. The Dutch have made new land from the marshy wastelands that used to stretch miles inland from the sea. The physical-political map shows that parts of the Netherlands are really below sea level. The very name Netherlands hints at this for "nether" means lower. It is these lands that are below sea level that the Dutch have drained and made into farm land. At present the Dutch are slowly draining the large Zuider Zee. Eventually it will be entirely agricultural land. So much of the Zuider Zee has been drained that it is no longer called the Zuider Zee.

To create new land, a dike, or dam, is built around the area to be drained to block off the waters of the sea, and the water within the dike is pumped into a canal by means of pumps powered by windmills or electric or diesel motors. When the land is dry and protected from the sea, it is fertilized. Later it can be used for growing crops and for pasture. These new lands are called *polders*. A great deal of the polder land is used for pasture.

These are flower gardens in the Netherlands. See how the canals flow between the plots of ground.

Courtesy Netherlands Consulate



Using the land. The people of the *Low Countries* — the Netherlands, Belgium, and Luxemburg — make very good use of the land they have and manage to grow an amazing amount of food on their small farms. This is made possible by the intensive farming methods used.

The lowlands of Belgium and the Netherlands provide excellent pastures for dairy cows. The Netherlands especially is widely known for dairying. Dutch farmers use large quantities of milk for making cheese, and much Dutch cheese is exported.

Vast quantities of flowers such as tulips, hyacinths, and crocuses are raised, chiefly for bulbs. These bulbs are grown in small fields and are cultivated by hand. One of the most famous flower-bulb centres is Haarlem. Many of the tulip bulbs in your garden probably came from Holland.

Belgian farmers carry on about the same kinds of work as their neighbors to the north. In Belgium, the farms are so small that in our country we might speak of them as gardens. Most of them are cultivated by the owner, and the whole family helps with the farm work.



Courtesy Netherlands Information Bureau

Picturesque windmills pump the water into collecting canals to make new land in the Netherlands. This photograph shows very clearly the low-lying polder land.

How the people use the sea. The prosperity of both the Netherlands and Belgium depends largely upon the sea. The sea carries away their exports and brings in their imports. Both countries depend upon their imports and exports, as you will see, so this is important. Also, several other nations use their ports. The North Sea is a busy highway, and all the goods that are funnelled down the great Rhine River reach the sea either in Belgium or the Netherlands.

Chiefly because of their sea connections with the outside world, both countries have acquired colonies in distant lands. Like the other great trading nations of western Europe, the Netherlands built a great colonial empire. The largest colonies were tropical islands southeast of Asia. The Dutch people got sugar, coffee, tea, rubber, and cacao through trade with these colonies. The islands also have large deposits of oil, which were developed by Dutch companies. These islands were called the Netherlands Indies, but now that they have become independent they are known as Indonesia. The Dutch people continue to buy their products. Many of the industries of the Netherlands depend upon the raw materials received from Indonesia. The Netherlands still has a small colony in South America and a few small islands in the Caribbean.

Belgium, like the Netherlands, has colonies overseas. Its most important colony is the Belgian Congo in Central Africa, which you can find on the map on pages 276-277. This large colony lies in the low latitudes. From it Belgium obtains many valuable tropical products. The Belgian Congo is also rich in mineral deposits. It has deposits of uranium, a very valuable mineral. It also mines large quantities of copper, lead, and zinc.



Courtesy Belgian Consulate

Bundles of flax stacked in a field in Belgium.

Manufacturing in the Low Countries. In spite of the importance of trading and farming in the Low Countries, more people make a living by manufacturing than in any other way. As you have learned, these countries are in the great manufacturing belt of western Europe. They are also helped by their position on the North Sea, at the mouth of the Rhine, near the industrial sections of France and Germany, and in the midst of the great plain that stretches across northern Germany and France. Their position allows them to import raw materials cheaply and to export finished goods easily.

The Netherlands has only small supplies of coal and no important metals. As a result, many of the factories depend upon the products of the farms and upon imported tropical goods for their supplies of raw materials. Some coal is mined in the southern part near the Belgian frontier, and coal is brought in from Germany and England. Another source of power in the Netherlands is windmills. With their long, revolving arms, they gather enough power from the wind to operate a few simple machines.

Cheese factories, flour mills, and meat-packing plants supply work for many people. Then, too, the Dutch are famous for their chocolate and cocoa. Sugar refineries use beet sugar from beets grown on Dutch farms and imported cane sugar. Textile mills use flax from nearby fields and cotton imported from the United States. The Netherlands also has important chemical and engineering industries. As you might expect, some Dutch factories make fertilizers. Farmers use large quantities of fertilizers to enable their land to yield the large crops that they do.

Belgium has rich deposits of coal, iron, and other metals, which help to make this country, though small, one of the manufacturing nations of Europe. There are many iron and steel mills in the valley of the Meuse River in Belgium. The heavy industries are the most important ones in Belgium, but textiles are a close second. The Belgians have long been famous for their weaving of cloth. Flanders was famous for woollens, linens, and silks long before coal and iron came into use. Before the English began to do their own weaving, much of the wool from England came to Belgium. Today rayon is another valuable product of Belgian textile mills.

Belgian women have long been known for their fine lace, most of which is made by hand in the home. Handmade Belgian lace brings good prices because it is so beautiful and so well made. In a country as crowded as Belgium, manufacturing, as well as farming, tends to be intensive. In other words, the people use small supplies of raw materials on which they spend a great deal of time, work, and skill.

LUXEMBOURG, A MINIATURE COUNTRY

Luxembourg is a small country, one of the smallest independent countries in the world. You could easily drive across it in an hour's time.

Part of the rich Lorraine iron field lies within the boundaries of this small country. Although much iron ore is exported, some of it is used in Luxembourg's own iron foundries and steel mills. Many of the people work in mines and factories, but outside the cities are small farms which would remind you of the farms in Belgium. Does the map suggest any problems that Luxembourg may have?

THE GEOGRAPHY WORKSHOP

I. THE WORLD IN YOUR OWN COMMUNITY

Canada has a number of contacts with industrial western Europe. If you have been looking for articles made in industrial western Europe, you probably have a number of such articles in your collection. Make a card for each article. On the card write the name of the country from which it came and the industry it represents. For example, if you have a dish from England, your card should say "England: pottery industry." How many industries are represented in your collection?

Perhaps you can find out how the owners of the articles got them. If they were bought in Canadian stores, they were brought to this country by importers. Importers are merchants who buy goods from other countries. Pretend that your class is an importing company. What goods made in industrial western Europe will you import? What kind of goods would the people in your community be interested in buying?

If members of your class have stamp collections they can undoubtedly bring to class stamps from the countries of industrial western Europe. Perhaps some pupils can bring coins from these countries.

Canada has two official languages. You will find them used side by side on many official forms and in trains, planes, and other places. What are they? Which western European countries do they come from?

II. TRADE OF WESTERN EUROPE

You are to choose the right answers to each of the following questions. Choose very carefully, because more than one answer may be right.

A view of the Rhine. A barge and a passenger steamer are in midstream. There is a castle on the hill.

Courtesy German Tourist Information Office



1. Which of the following groups of products are exported from Ireland?
   a. wheat, corn, rice
   b. coal, steel, machinery
   c. butter, cheese, bacon
2. Which of the following groups of products are exported from the United Kingdom of England, Scotland, Wales, and Northern Ireland?
   a. potatoes, oats, tobacco
   b. woollen, cotton, and linen textiles
   c. coal, dishes, machinery
3. Which of the following groups of products are imported into the United Kingdom?
   a. iron, tin, copper
   b. wheat, meat, butter
   c. cotton, linen, wool
4. Which of the following groups of products are exported from one or more of the Low Countries?
   a. lace, linen, woollen cloth
   b. wheat, oats, potatoes
   c. butter, cheese, salt fish
5. Which of the following groups of products are exported from France?
   a. gloves, fine clothing, dishes
   b. wheat, sugar, meat
   c. cotton, coconuts, cacao

Violin-making is a highly skilled art. These French craftsmen take great pains with their work.

Courtesy French Government Tourist Office



6. Which of the following groups of products are exported from the United Kingdom?
   a. salt fish, machinery, cotton cloth
   b. wheat, corn, oats
   c. butter, bacon, eggs

III. IMPORTS AND EXPORTS

Sort the following products into two lists. In one list place products that you know are imported into industrial western Europe. In the other list place products that you know are exported. You will need to remember some of the things you learned about manufacturing, farming, and fishing in this area.

leather	coffee
meat	salt fish
machines for factories	cacao
coconuts	raw wool
metal tools	cotton fibres
wheat	sugar

IV. FRENCH INFLUENCE IN CANADA

The influence France has had upon Canada is seen clearly in the eastern part of the country. The original French Canadians came from France, bringing with them French names, French customs, French literature, music, and art.

Make an outline map of the province of Quebec and another of France, and print on them the names you can find that are common to both. How many came from Mediterranean France, and how many came from industrial France? In what provinces of Canada besides Quebec are there French place names? For this exercise you will need a detailed map of Quebec.

Do you know the Canadian folk song "Sur le Pont d'Avignon"? Like many of our songs it is from France. Much of our best literature, music, and painting has been influenced by the work of writers, composers, and artists in that country. Some of our buildings, too, are like theirs.



SCANDINAVIAN EUROPE

The Norwegians and the Swedes share the great peninsula that lies between the Atlantic Ocean and the Baltic Sea. A long, rugged mountain barrier divides the *Scandinavian Peninsula* into two regions. Part of the land slopes from the mountains to the Atlantic; this land is Norway. The rest of the land slopes toward the Baltic Sea; this land is occupied by Sweden.

Denmark consists of a northward-pointing peninsula, called Jutland, and a group of islands, some little and some big, which serve as stepping stones from Jutland to the Scandinavian Peninsula.

East of the Scandinavian Peninsula lies Finland. Long ago, Finland belonged to Sweden. At that time many people moved from Sweden to Finland and mixed with the original Finnish people. This Swedish influence has helped to make the Finns somewhat like the people of the Scandinavian Peninsula.

The island of Iceland lies about six hundred miles west of northern Scandinavia. It was settled by people from Scandinavia, and so resembles Scandinavian Europe in many ways. For hundreds of years the island belonged to Denmark, but now Iceland is completely independent.

Two areas compared. Scandinavian Europe is different from industrial western

Europe. Because it is farther north it has lower temperatures, a shorter growing season, longer summer days, and shorter winter days. It has more forests than industrial western Europe, but it is not as well supplied with minerals. It has definitely less farm land and more mountains. Although Scandinavian Europe is larger than industrial western Europe, it has only about one-fifth as many people. You can, no doubt, already think of many reasons why this is so.

WHAT WE CAN LEARN FROM MAPS

LOCATING SCANDINAVIAN EUROPE

1. On an outline map of Europe, print the name of each of the following countries: Norway, Sweden, Denmark, Finland, Iceland. Refer to the map on pages 198-199 to find to which of the Scandinavian countries the Faeroes belong. Print the name of these islands on your outline map. Now color the part of the map that shows Scandinavian Europe.

2. Turn to the map on pages 2-3. Find the line of 60° north latitude and follow it across Europe. Note that it passes through the southern part of Norway and Sweden. Follow this same parallel across Canada. You see that it passes along the northern edge of our four western provinces.

3. Look at the map on page 233. What countries in Scandinavian Europe border the Baltic Sea? What *gulf* helps to separate Sweden and Finland? What gulf borders

In this picture you can see some of the mountain slopes that cover much of the Scandinavian Peninsula. Notice the well-kept fields, the racks of drying hay, and the little groups of neat farmhouses.

James Sawders



Finland on the south? Trace the route a ship takes from the North Sea to the Baltic Sea. A canal south of Jutland can also be used in going from one sea to the other. Look at the map on page 242 and find the name of this canal. Through what country does the canal pass? What is the chief advantage in using this canal?

THE LAND AND THE PEOPLE

1. The physical-political map on pages 198-199 shows that a large part of the Scandinavian Peninsula is covered by the Scandinavian Highlands. What does the physical-political map tell you about the latitude of these highlands? In which countries are the highlands nearer the sea? Which is higher, northern Finland or southern Finland? Which has more lowland, Norway or Sweden? Finland or Sweden? Which of the Scandinavian countries has lowland only?

2. Refer to the map on pages 14-15 to find where most of the people in Scandinavian Europe live. Compare the population map with the physical-political map and tell whether there are more people living in the lowlands or in the highlands. Are the Scandinavian Highlands densely or sparsely populated?

FOLLOWING THE COASTLINE

Find the North Cape on the physical-political map. Follow the coastline southward. You see that many narrow strips of water extend far back into the mountains. These long, deep inlets are called *fiords*. Notice the ridges of high land that jut out between the fiords. Numerous islands fringe the coast. Turn to the map on pages 2-3. You see that the coastlines of British Columbia and of Norway are very much alike.

Many long strips of water also extend into Denmark, but the scenery there is entirely different from the scenery in Norway. The land on either side of the inlets is low. There are no lofty peaks or rugged mountains. Most of the land is level.

Few people live on the sandy beaches and *dunes* of the west coast of Denmark. The shifting sands and shallow sea make this coast dangerous for ships. Denmark turns its back to the North Sea and looks toward the islands to the east. Copenhagen (Köbenhavn), the capital, is on one of these islands. Does it seem to be a convenient place for a capital?

PEOPLE AND CLIMATE

1. Refer to the map on pages 8-9. Compare it with the population map on pages 14-15. How much rainfall is there in the more thickly settled parts of Scandinavian Europe?

2. Find Scandinavian Europe on the map on pages 10-11. How long is the growing season in the area where most of the people live? As you know, the two things that influence the length of the growing season most are latitude and altitude. How do you explain the short growing season in most of northern Scandinavia? How do you explain the short growing season along the boundary between Norway and Sweden?

Find the length of the growing season along the Atlantic coast. Notice that it is at least three months long as far north as Norway extends. This is a long growing season for lands this far north. Has northern Sweden as long a growing season as northern Norway? A warm current of water flows north along the coast of Norway. This is part of the Gulf Stream that was mentioned in the last chapter. In Norway, the winds are usually from the west. This will help to explain why northern Norway has a growing season longer than that of northern Sweden. Which of these two countries does Denmark resemble? Which one is similar to Finland?

3. Turn back to the map on pages 12-13. What kinds of forests grow in the southern part of the Scandinavian Peninsula? in the

central and northern parts of the Scandinavian Peninsula and Finland? As you travel north in Scandinavia, you see fewer and fewer broadleaf trees, such as oak and beech, and more and more cone-bearing trees, such as pine and spruce.

LOOKING AT SCANDINAVIAN EUROPE

In Scandinavia, mountains and sea intermingle. Mountain ridges project outward from the land. We call them *capes* and peninsulas. Arms of the sea extend into the long, narrow valleys between the ridges to form fiords. The picture on page 237 shows a fiord winding through the mountains.

In the Ice Ages, tongues of ice moved slowly down the valleys from the mountains. In many places these valley glaciers pushed all the way to the sea, widening and deepening the valleys through which they moved. Later, after the ice melted, the land sank slightly; the sea flowed into the valleys to form fiords and surrounded mountains near the shore to make the islands that fringe the coast.

Slopes and transportation. Because the crest of the Scandinavian mountains is near the Atlantic coast, Norway has steeper slopes and swifter rivers than Sweden. Mountains, rivers, and fiords make travel by land very difficult there, and roads running north and south have many bridges, tunnels, and sharp curves. This has hindered railway and road building, and Norway's settlements have been connected mainly by steamship lines. Boats run on regular schedules up and down the coast.

Sweden, with a larger lowland area, with gentler mountain slopes, and with greater industrial development, has built more railways in the southern lowland part. Some extend to the far north. One crosses the Arctic Circle and the mountains to reach the Norwegian port of Narvik.

In Sweden, also, waterways are used for transportation. Food is hauled up and down the long coast in ships of different sizes. Boats steam across the lakes and up and down some of the rivers. Even shallow rivers may be used; on such rivers, logs are floated downstream from the forests to the sawmills.

Finland has lowlands in the southern part, where most of the people live. There are only a few railways, but there are thousands of lakes and many rivers that are navigable or can be used for floating logs. One lake system, which is used for transportation, consists of more than a hundred large lakes and hundreds of small ones. This provides cheap transportation in summer. In winter, when the lakes and rivers freeze, the smooth parts are used for roads.

Denmark relies more upon roads and railways than upon inland waterways. Remember, though, that this country consists of islands as well as of a peninsula. Most of these islands are connected with one

A seter is a pasture in the high mountains. The snow and ice are part of a huge glacier.

Courtesy Embassy of Iceland





This is some of the fertile Swedish farm land.

Courtesy Swedish Travel Information Bureau, Inc.

another and with Jutland by ferryboat service, though some of them are connected by bridges. None of the Scandinavian countries have good natural transportation routes.

Natural resources of Scandinavia. Much of the land in Scandinavia is not suitable for crops, but valuable forests cover a large part of this land. Other parts can be used for pasture. Even so, Scandinavia contains much land that cannot be used. Outside of rich deposits of iron ore in Sweden, Scandinavian Europe has few mineral resources. However, Norway, Sweden, and Finland have an abundance of water power, which helps to make up for their lack of coal. The countries of Scandinavian Europe also have the advantage of being located near good fishing grounds.

FARM LANDS IN SCANDINAVIA

In Norway, small farms are strung along the fiords and up the mountain sides wherever there are little patches of land not too steep to be cultivated. In Sweden, farms are most numerous in the southern lowlands. They vary in size from five to twenty acres. In Finland, the farms are scattered along the lakes and the coast. Denmark is fairly level, and a larger part of the country is suitable for farming. But Danish farms, too, are small, for the government encourages intensive farming.

The problems of Norwegian farmers. Much of Norway's land is barren and mountainous. The soil is thin and stony, and drenching rains fall along the western coast. The amount of crop land is small. A glance at the map on pages 12-13 will show that the growing season in most parts of Norway is short. Life is not easy for a Norwegian farmer.

The farmers plant oats, rye, barley, and potatoes on the little patches of thin, stony soil. Which of these crops is best suited to thin soils? If you do not remember, turn back to page 211 and read the topic "cool-climate crops" again.

Norwegian farmers, because of the type of land they have, concentrate more on raising animals than on growing grain. Much of the land in Norway is used for pasture and for growing hay. The farmer has only a short, cool summer in which to prepare for a long, cold winter. Since he



Courtesy Royal Danish Consulate

Cows on a Danish farm. Dairy farming is a very important industry in Denmark.

sometimes has trouble drying his hay because there is so much rain, he hangs the hay on racks so that the air and the sun can dry it more quickly. There are some of these racks in the picture on page 228.

During the short summer, while the farmer is taking care of his crops and hay, the cows, sheep, and goats are driven to *seters,* high mountain pastures where the animals can graze. Those who tend the animals live in lonely little houses made of stone and sod. Some of their time is spent in making cheese, which does not have to be sold right away because it keeps well. At the end of the summer, the animals are driven back to the farm land. All during the long winter they are sheltered in warm barns and are fed the hay and grain that have been stored for them.

Farm lands of Sweden. If you look at the physical-political map, you will find that Sweden has more lowland than Norway. Its highlands are not so rugged, its soils are not so stony, nor has Sweden as much rain and snow as Norway. These conditions make it possible for Sweden to produce much more food than Norway can.

Farmers in southern Sweden grow about the same kinds of crops as do their Norwegian neighbors — oats, barley, rye, and potatoes. Some wheat and sugar beets are also grown in the southernmost tip of Sweden.

Although the growing of crops is important in some parts of Sweden, dairying is the chief business of the Swedish farmers. Grass grows well in this climate, and much of the land is too hilly and rough to be used for planting crops. It is best for hayfields and for pastures. Cattle graze on the eastern slopes of the Scandinavian Highlands and on the cool lowlands along the Baltic Sea. Hogs and chickens are also plentiful. Sweden exports butter, cheese, eggs, and bacon of high quality.

Farming in Denmark. Denmark has several natural advantages which help to make it a better food-producing region than the rest of Scandinavian Europe. In the first place, Denmark is farther south and so has a longer growing season than most parts of Scandinavia. In the second place, the land is low and nearly level. In the third place, the rainfall is from 20 to 40 inches a year.

Denmark has some disadvantages, too. For one thing, the soil is poor in most parts of the peninsula, and the weather tends to be damp.

For a long time Danish farmers managed to produce only enough food for their own people, with nothing left to sell to other people. Denmark was a rather poor country. It is now quite prosperous because its people found a better way to use their land than growing grain, which her climate did not suit. Near Denmark is Great Britain, which always needs dairy products and bacon. These Denmark is well suited to provide. The Danes began some time ago to specialize in producing the foods wanted by Great Britain. Over the years the system of agriculture changed. Most of the land is now used as pasture or for growing feed for the animals. The Danes have found that it even pays to import food for animals so that they may raise more animals. The breeds of animals have been improved until now the

Danes have the highest quality of animals. Fertilizers have increased crop output. Some farmers specialize in raising poultry, and fresh eggs are exported in large quantities. Skim milk is returned to the farms and fed to the pigs. Such feeding produces the lean bacon wanted in Great Britain. Canadian farmers compete with the Danes for the British bacon market.

Finland's farms. The physical-political map shows that all of Finland lies more than 60° from the equator and that the northern part lies beyond the Arctic Circle. It is in the same latitude as the Yukon Territory and the Mackenzie River Valley.

In most parts of Finland it is not profitable to grow grain. Not enough is grown to supply the people, and some must be imported. Butter, cheese, and eggs are exported, for the dairy industry in Finland is very important. Many of the marshy or stony lands can be used for pastures. The climate and the soil are favorable for growing hay, oats, and barley.

HARVEST OF THE SEA

Norwegian fishermen. Conditions for fishing are especially good along the coast of Norway. The long and irregular coastline provides places for good harbors. Even during the long winters, harbors north of the Arctic Circle are not icebound because currents of warm water flow past the coast of Norway, keeping its ports open. The physical-political map shows that the water is less than a mile deep far out from the Norwegian coast; actually much of it is less than five hundred feet deep. You have learned that shallow places, or banks, are good fishing grounds.

There is another reason why many fish are found off the Norwegian coast. The currents of warm water that drift along this coast meet the cold Arctic waters there. The result is a temperature that encourages the growth of food that suits cod, mackerel, herring, and many other kinds of fish. Off Newfoundland, too, currents of cold and warm water meet.

Norwegian fishermen are interested in another kind of sea life. They hunt whales. To do this, they must sail far away from home because the whales they hunt live in very cold water. Most of these fishermen go to the Antarctic Ocean, where whales are fairly plentiful. Some use is made of every ounce of each whale. Parts that used to be thrown away are now ground up for fertilizer. The oil is used for fuel, soap, and machine oil.

Other fishermen. The people of Sweden, Denmark, and Finland also fish, but not as much as the Norwegians. Denmark lies within easy reach of the North Sea fishing grounds. It owns the Faeroes, where fishing is the leading industry.

Sweden and Finland are farther away from good fishing grounds. Fish are caught in the sheltered channels between the islands and the coasts, and in the lakes. Fishermen go out into the Baltic Sea, but the fish caught there are not as good as the

Map of Scandinavian Europe.





Courtesy Swedish Travel Information Bureau, Inc.

These logs are being stored in a river near a mill in Sweden. When they are needed, they will be taken from the river.

fish caught in the North Sea. Many of the farmers in Finland combine fishing and farming. Women work on the farms while the men are at sea.

SCANDINAVIAN FORESTS

The prosperity of the people of Sweden, Norway, and Finland depends to a great extent upon their forests, because wood and wood products are their chief exports, and the forest industries employ a large percentage of the people. A large part of Scandinavian Europe is covered with dense forest, though trees do not grow in the bare lands in the northern Arctic regions or in the high mountains. Young trees are planted when forests are cut, in order that this natural resource will continue to contribute to the wealth of Scandinavia.

Pine trees are used mainly for lumber. Spruce and fir trees are made into wood pulp, which is needed in manufacturing paper, rayon, and plastics. A large quantity of timber is used for matches. The centre of the match industry is at Jönköping, at the southern end of Lake Vätter.

The timber industry first became important in Canada when Napoleon forbade Scandinavia to export timber. Britain then began to buy her timber from Canada instead of from Scandinavia.

MINERALS OF SCANDINAVIA

Scandinavian Europe does not have many mineral resources, but if you turn to the map on page 202, you can see that Sweden has large deposits of iron ore both in the northern part, called Lapland, and in the central part, between Lake Väner and the Gulf of Bothnia.

Sweden's iron and steel industry. In the region called Lapland, the most valuable deposits of iron ore are found. There, near the town of Kiruna, the ore lies in beds of great thickness. Like Canada's iron ore in Ungava, it is so near the surface that it can be taken from open-pit mines.

Sweden has very little coal, and yet its people have long been famous for the manufacturing of high-grade steel. They import coal, and they also use *charcoal* instead of coke. Both these methods are expensive, but since the Swedish steel producers specialize in steel of high quality, they can charge high prices.

Sweden uses most of the iron ore mined in the central part of the country. The ore of Lapland, however, is exported. Ore from the mines near Kiruna is loaded on the cars of an electric railway and hauled to the coast. Lulea, the port on the Gulf of Bothnia, is closed by ice in winter, so during these months the Norwegian port of Narvik is used.

HYDRO-ELECTRIC POWER

Scandinavian Europe lacks coal and petroleum, but Norway, Sweden, and Finland, like Canada, have an abundance of

water power. Rushing rivers and streams flow from the mountains. The rainfall is heavy, the forests prevent the water from flowing away too quickly, and the lakes act as reservoirs.

Scandinavia has developed less than one fourth of its water power. Electricity made in the hydro-electric plants is used in homes, mines, and factories. Copenhagen gets its electricity from Sweden through cables that run beneath the sea. What is the name of the strait between Sweden and Denmark?

SEA TRADE AND OVERSEAS POSSESSIONS

The importance of sea trade. Norway has a large *merchant marine* — only the United States and Britain have merchant marines that are much larger. It has more tons of shipping than many sea-bordering countries with larger populations, and its ships are in excellent condition.

Perhaps you are wondering how Norway, with its small population and its scanty resources, can use such a large merchant marine. Other than forest products and fish, it has little to sell in other countries. The answer is that Norwegian ships are used chiefly for carrying goods for the people of other lands. The ships of Norway, operated by Norwegians, are chartered or hired by anyone who needs them. On one trip, for example, a Norwegian ship may carry a cargo of British machinery from England to Argentina. There, it may take on a cargo of farm products and carry it back across the Atlantic to Italy. By carrying goods for other people, the Norwegians earn money which increases the amount of foreign currency that Norway has to buy food and other things that it needs from foreign countries.

Sweden has a large trade in bulky goods. You will remember that lumber, wood pulp, paper, and iron ore are exported in large quantities. Many bulky manufactured goods and raw materials, and much fuel are imported. About half the exports are carried on ships of the Swedish merchant marine. Their boats also carry goods for other countries.

SCANDINAVIAN SEAPORTS

The Scandinavian countries have many harbors, and with good reason. Some are used mainly by fishing fleets, others are used by ore boats. The ocean trade is carried on through a few well equipped harbors. These ports have modern docks and warehouses suitable for the ships that use them. The largest of the Scandinavian cities are described briefly in the following paragraphs.

Stockholm, a city of land and water. Stockholm, the largest city on the Scandinavian Peninsula, is the capital of Sweden. It is built on a peninsula but spreads over many islands. You would probably ride in steamers as often as you would ride on streetcars in travelling from one part of the city to another.

It has a good harbor, and from it railways run northward along the Baltic plains to the timberlands of Sweden, to the Atlantic seaboard, and southward to the city of Malmö.

Below is one of the many ships built in Sweden.

Courtesy Legation of Sweden



At Malmö there are ferries that carry trains between Sweden, Denmark, and Germany.

The port of Oslo. The chief cities of Norway, like those of Sweden, are near the sea. Oslo, the capital, lies at the head of a fiord and is surrounded by low, wooded hills.

Norway does not have a dense network of railways, but the few railways it does have come together at Oslo. The long rivers flow toward the south. These transportation routes help to make Oslo the gateway to the more densely populated section.

Copenhagen, an island city. The capital of Denmark is Copenhagen. It is the largest city in all of Scandinavian Europe. In it one-quarter of the people of Denmark live. One part of the city extends across a deep, narrow channel to a neighboring island. This channel makes an excellent harbor. Because of its harbor and its location at the entrance to the Baltic Sea, Copenhagen has grown from a small fishing village to a busy port of trade. Find the city of Copenhagen on the maps on pages 198-199 and on pages 233.

This is a small village on the eastern coast of Iceland. The boats are fishing vessels.

Courtesy Embassy of Iceland



Most of the Danish goods bound for foreign markets pass through Copenhagen. Other countries use this port too, and a considerable transit trade is carried on.

The city of Helsinki. Helsinki is the capital of Finland and also its chief port and commercial centre. Turn to the map to find on what body of water Helsinki is located. As in other Baltic ports, icebreakers keep this body of water open as long as possible in the winter. Use the scale of miles to see how far Helsinki is from the North Sea. Why is this a disadvantage?

POSSESSIONS OF DENMARK AND NORWAY

The Faeroes and Greenland are both owned by Denmark. Fishing and raising sheep are the most important occupations of the people living on the Faeroes. The population is small, but that of Greenland is even smaller. Most of Greenland is buried under an icecap, and the people, most of them Eskimos, live on the rocky coast. Find the Faeroes and Greenland on the maps on pages 198-199 and 22-23.

Far to the north, in the icy waters of the Arctic, lies a group of islands that belong to Norway. They are now called Svalbard; they used to be called Spitsbergen. Svalbard is a region of sharp peaks and large glaciers. Norway is interested in these islands for two reasons. In the first place, they have rich deposits of coal. Because of weather conditions, however, mines are usually kept open only a few months each year. In the second place, Svalbard is an excellent air base. Look at its position on the map on page 25.

THE ISLAND OF ICELAND

Iceland also is an important air base. Because it is farther west than any other part of Europe, planes flying the North Atlantic route often stop there to refuel. Find Iceland on the map on page 25.

The map on pages 193-199 may help you to understand why the population of Iceland is small. Most of it is covered with mountains. Glaciers and *volcanoes,* rushing streams and hot *springs,* give variety to the mountainous landscape. The gushing hot springs are called *geysers.* These geysers supply the people of Iceland with hot water and steam for heating, cooking, and washing. They have no coal or wood to burn, so rely on the hot springs for heat.

Grass is the natural vegetation over much of the island. It is used as pasture for sheep, cows, and ponies. Iceland specializes in raising sheep of fine quality. They are small, their wool is long, and they do not require much food. The farmers are interested chiefly in dairying, for Iceland is not a good place for growing crops. Because Iceland is not ideal for farming most of the Icelanders are engaged in the fishing industry.

THE GEOGRAPHY WORKSHOP

I. A SCENE IN NORWAY

In the description below, choose the right word or phrase from those in brackets.

The picture on page 233 was taken on the shores of a long lake 70 miles north of Oslo. The lake is at the bottom of a narrow (fiord, valley). In the picture you are looking down upon the land of an agricultural school from (a hill, an airplane). The straight, dark lines are racks with (hay, fish, laundry) drying on them. Part of the land is farmed and

A scene typical of Norway. See how the fiord stretches inland between mountains.

Courtesy Royal Norwegian Consulate



part is covered with (snow, forest, rocks). There are (only cone-bearing, only broadleaf, both cone-bearing and broadleaf) trees in the picture. The buildings are (a small town, factories, farmhouses and barns).

II. REASONS TO FIND

In the following list at the left are statements about Scandinavian countries. All are true. At the right is a list of reasons why the statements are true, but the reasons are not in the correct order. Copy the statements, adding the right reason to each one. Be careful. You may find a reason that seems almost right, but if you look farther you will find a better one.

1. Land travel in the Scandinavian Peninsula is quite difficult.
2. The Scandinavian Peninsula is cut off from the rest of Europe.
3. More iron ore than steel is exported from Sweden.
4. Wood products are the leading exports of Norway, Sweden, and Finland.
5. Large areas in the Scandinavian countries are not good farm land.

a. because there is water all around it except in the far north.

b. because of their rough surface, short growing season, and cool summers.

c. because large areas are more suitable for forests than farming.

d. because of the many mountains, rivers, and fiords.

e. because the country has no deposits of coal.

III. SCANDINAVIA AND CANADA

Now you have become acquainted with more of the world than you knew before. Your new knowledge will be useful to you in following the suggestions given below. The suggestions have to do with natural environment, social environment, and history.

You may live a great distance from the Mackenzie River valley, but you will find it interesting to compare it with Finland. You could compare the latitude, climate, and natural vegetation of the two regions. You could compare also the products, means of transportation, and density of population. In which of the two are the natural resources more fully developed?

Make a survey of your community to discover whether it has any industries that are also carried on in Scandinavia. Does your community use hydro-electric power as much as the Scandianavian communities do? Why do both Canada and Scandinavia make so much use of their water power?

If fishing is carried on in your community, you should compare fishing in Canada and in Scandinavia. It is interesting to note that Norway exports larger quantities of fish than does any other country. But Canada, too, sells great quantities of fish, including our expensive lobsters and salmon. Canada actually receives more money for the fish she exports than Norway does.

Courtesy Royal Norwegian Information Service





CENTRAL EUROPE

You have seen why the countries of industrial western Europe and Scandinavian Europe may be called maritime countries. You have also seen that much of their progress was the result of their taking advantage of the opportunities for ocean trade and transportation.

Central Europe is almost a *landlocked* region. Instead of trading with colonies and overseas countries, the countries of central Europe have had to depend on each other for many of the foods, raw materials, and manufactured goods that they cannot supply themselves. Central European countries do trade with each other and also with other countries, but it is not as easy for them to trade as it is for those countries that have good harbors near the great ocean routes.

Many kinds of land. The Alps mountains curve along the southern edge of this region, and the North Plain stretches across the northern part. Between them is a region of uplands and eastward, toward the Black Sea, are other large plains with mountain ranges separating them from each other.

The arrangement of highlands and lowlands causes central Europe to slope in two directions. It slopes to the northwest and to

the southeast, as is shown by the directions in which the rivers flow. For the people in the northern part of central Europe, the easiest travel routes lead to the North and Baltic seas, while the southern part faces the Black Sea. These conditions help to account for the different interests of the people within this great area.

The ways of life differ greatly within central Europe. The parts that face the North Sea and are in close contact with industrial western Europe tend to be fairly industrialized, and modern in their methods of farming. As you move eastward there is less and less industry and the farming methods become more primitive.

WHAT WE CAN LEARN FROM MAPS

GETTING ACQUAINTED WITH CENTRAL EUROPE

1. The region called central Europe in this book lies between the Scandinavian lands to the north and the Mediterranean region to the south. It includes all of Germany except the Rhine Valley, all of Poland, Czechoslovakia, Switzerland, Austria, Hungary, Romania, and Bulgaria, and all of Yugoslavia except the coastal lands.

On an outline map of Europe, print the names of the countries that make up the region called central Europe. Use the map on pages 198-199 to locate each of these countries. With a dotted line, separate the Rhine Valley and the coast of Yugoslavia from the countries whose names you have printed on your map. The map on page 239 will help you to see where to put the dotted lines. Next, color the part of your map that shows central Europe.

2. Although central Europe does not border on an ocean, it has coastlines on three seas. Print the names of these seas on your outline map. What large country borders central Europe on the east? What countries border it on the west? What countries of central Europe are without coastlines? What countries touch the three seas?

Switzerland's famous mountain, the Matterhorn, towers over this picturesque village, tucked snugly in a valley formed by a glacier.

Burton Holmes from Ewing Galloway



HIGHLANDS AND LOWLANDS

1. Turn to the physical-political map on pages 198-199, and again find the Great Lowland Plain. What does the map tell you about the altitude of the land in this region? You have already seen that France, Belgium, and the Netherlands share this great lowland region.

2. Find the other lowland areas in central Europe. What mountains surround the Plains of Hungary? Notice the long river that flows southeastward

through these plains. What name is given to the low plain near the mouth of this river? You can find its name on the map on page 242. Find these two lowland areas on the physical-political map. What is the name of the long river?

3. Refer again to the physical-political map and find the Alps. The land between the Alps and the Great Lowland Plain is called the Central Uplands. What is the name of the mountain range that extends from Poland into Romania? In what direction do these mountains extend? What does the physical-political map show about the altitude of most of the Central Uplands? Which mountains are higher, the Alps or the Carpathians?

RIVERS AND SLOPES

1. The part of the Great Lowland Plain that is in central Europe will be referred to as the North Plain. You can see on the physical-political map that it is crossed by four main rivers. The source of each river is in the highlands to the south. Trace the courses followed by the Weser, the Elbe, the Oder, and Wisla (Vistula). They all flow northward, showing that the land of the northern part of central Europe slopes down to the north. Near the mouth of each of these rivers you see one or more ports. On which river is each of these ports: Hamburg, Bremen, Stettin (Czczecin), and Danzig (Gdansk)? Find these places and rivers on the map on page 242.

2. Find the Danube River on the physical-political map. It rises in the Black Forest and flows east and south. Trace the river to the Black Sea. Notice that it has tributaries that rise in the mountains north and south of the Danube. This part of central Europe slopes to the south and east. It may be said to face the Black Sea. Countries that border the Danube or through which it flows are called the Danube countries.

3. Mountains or higher land from which rivers flow in opposite directions are divides. A divide separates the area drained by one river from that drained by another. Find some divides on the maps on pages 198-199 and page 242.

WHERE PEOPLE LIVE IN CENTRAL EUROPE

Look at the population map on pages 14-15 and notice that there are great differences in the density of population in the different parts of central Europe. Try to answer the following questions:

1. How does the density of population of central Europe compare with that of industrial western Europe? with that of Scandinavian Europe?

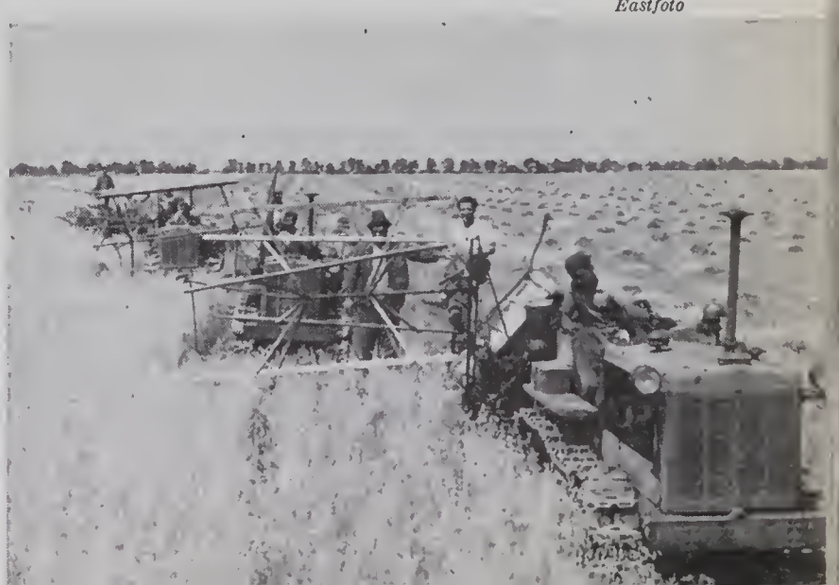
2. Find on the map the part of central Europe that has the most people. Does the physical-political map suggest any reason why so many people can live in this thickly settled region? Does the map on page 202 show that the large area of dense population has coal and iron? Does the physical-political map show that the people of central Europe have good transportation routes? Is it easy for them to trade with the other parts of Europe? Why or why not?

CLIMATE AND VEGETATION

In order to answer the following questions, you will need to use maps that show rainfall, growing season, and vegetation.

A harvest scene in Romania. This picture was taken on a state farm.

Eastfoto





A map of central Europe and part of Mediterranean Europe.

1. How do mountains affect rainfall? In general, have they more or less rain than the plains nearby? Look at the Alps on the rainfall map on pages 8-9 to check your answer. How do you explain this difference?

Suppose the Alps extended in a north-south direction at the western edge of central Europe instead of in an east-west direction. How would such a change in the mountains affect the rainfall of central Europe? Check by noting how the mountains in British Columbia affect rainfall in western Canada.

2. Use the map on pages 10-11 to find the length of the growing season in the Plains of Hungary and the length of the growing season in the Wallachian Plain. The Carpathians help to shut out the cold winds. On which side of the Danube Valley are they?

3. Turn to the map on pages 12-13 to see what kind of natural vegetation is found on the North Plain. What kind is found along the north coast of the Black Sea? How do you explain this difference? Name one place where there are cone-bearing forests.

THE REGION OF THE NORTH PLAIN

Central Europe has a share of the Great Lowland Plain, which stretches from southwestern France north and east all the way across Europe.

FARMING ON THE NORTH PLAIN

Turn to the map on pages 30-31 and trace the parallel of 50° north latitude across Canada. Now trace the same parallel on the physical-political map of Europe. You can see that the North Plain of central Europe is north of this parallel. Farm lands on the North Plain are in latitudes corresponding to those of Canada's prairies. The summers are short, but the days are long.

Climate and soil. Temperatures in the western part of the North Plain are neither extremely low in winter nor extremely high in summer, because the winds that blow from the Atlantic moderate the climate. The climate changes, however, as one travels eastward, because the temperature is influenced less and less by the winds from the ocean and more and more by the winds from the land. The climate of the eastern part of Europe is continental. Winters are cold and summers are hot.

The winds from the ocean carry moisture far inland, so that all parts of the North Plain have plenty of rain for crops, but rainfall gradually decreases from west to east. In the eastern part of the North Plain most of the rain falls in summer, when it is most needed for crops.

Much of the soil of the North Plain is coarse and sandy. There, as in Denmark, men have had to solve the problem of making poor, sandy soils yield abundant crops. The land has been drained and fertilized and crops carefully selected. Through the use of these modern methods of farming, many parts of the North Plain have become important food-producing regions.

Farm products. Turn to the map on page 244 and notice that rye is grown in all parts of the North Plain. It is the most important grain crop. Except in the river valleys the soils are sandy, but rye can be grown even on the poorest soils when they are properly fertilized. From rye is made the dark bread eaten by millions of people in central Europe. You can see on the map that rye production drops off when you come to the plains of France. There, both the soil and the climate are favorable for growing wheat, and so it is grown.

Potatoes are even more important than rye. You can see on the map on page 256 that enormous quantities of potatoes are grown on the North Plain. They do well in regions that have sandy soils and cool, moist climates. They are used in a variety of ways. On the North Plain, farmers raise them, not only as food for people, but also as substitutes for things they do not have. Potatoes are dried and then ground into flour. Corn is not grown on the North Plain, and since it would be expensive to import it, animals are given potatoes as feed. Starch is made from part of the potato crop, and from another part fuel alcohol is made.

The northernmost part of central Europe borders the North and Baltic seas. There, the natural environment is much like that found in Belgium, the Netherlands, and Denmark. The coast is low, and in some places it is very wet. As in the neighboring countries, much of the land has been drained and is now used for pastures or for raising oats. Cattle are kept for dairy products rather than for meat. Hogs are the most important animals raised for meat. They are fed on potatoes and on the skim milk that is given back to the farmers by the dairies. The skim milk is left after the cream has been made into butter and cheese.

The map on page 323 shows you that the southern part of the North Plain is the chief

sugar-beet region. Magdeburg, which you can find on the map on page 242, is the centre of this district. There the soil is richer than in many other parts of the North Plain and, in addition, is heavily fertilized. The climate favors the raising of sugar beets, for the springs are cool and moist and the autumns are cool and dry.

Where in Canada are large quantities of sugar beets grown? What kinds of soil and climate have these regions?

MANUFACTURING

In the eastern part of the North Plain, more people are engaged in agriculture than in manufacturing. This situation gradually changes as you move westward, until more people are engaged in manufacturing than in agriculture. At the southern edge of the North Plain lies one of the leading industrial districts of the world. It is an eastward extension of the great industrial district about which you learned in your study of western Europe.

This region has three advantages for manufacturing. It has an abundance of coal, it has hydro-electric power for running machinery, and raw materials of various kinds are found within easy reach of the manufacturers.

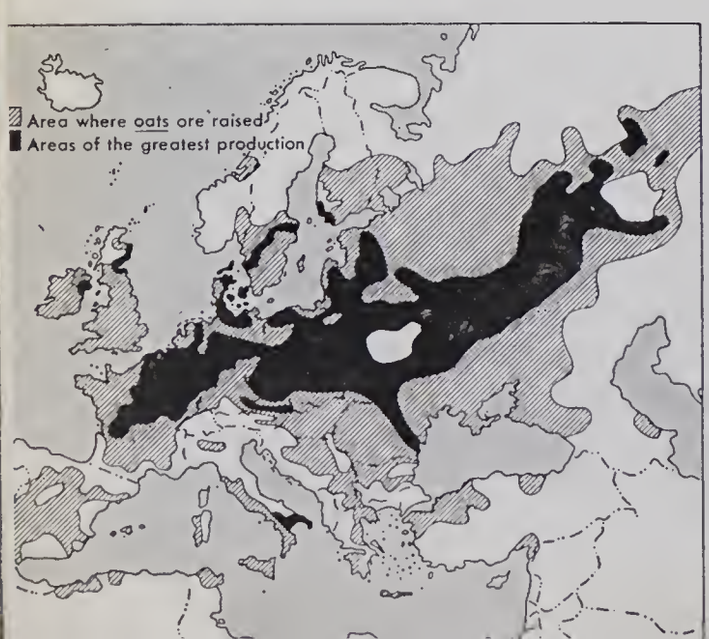
The factories require many workers, so this has become a densely populated area, as you can see on the population map. To simplify the transporting of goods to and from the factories, there is a dense network of railways and roads, and there are also canals and navigable rivers.

Mines and factories in Saxony and Silesia. Within this great industrial district of central Europe are two coal fields, which have become the basis for two large manufacturing areas at the edge of the North Plain. These mines are in the districts of Saxony and Silesia. Find Silesia on your map. It is in the southwest corner of Poland. Saxony is a triangular shaped region with a base formed by the Ore Mountains. Both of these regions are rich in mineral resources. They have coal, iron, silver, lead, zinc, and other kinds of minerals.

Machinery of all kinds is produced in Saxony. In Chemnitz are large textile mills that make cotton and woollen goods. Dresden has long been famous for the fine china made nearby. Perhaps you have some Dresden china at home. Leipzig prints more books than any other city in the world. All these cities have many kinds of factories, but they are most famous for the articles we have mentioned.

A large percentage of the people living in Silesia are farmers. Fine pine forests cover the hillsides. Raw materials are supplied to factories from farms and forests, as well as from mines. One of the best-known commercial and industrial centres of Silesia

Maps showing where oats and rye are grown in Europe.





is Breslau (Wroclaw). Products of the surrounding region are sent there, to be used in its factories or forwarded to other manufacturing centres.

Chemical industries. Germany is one of the leading countries in the manufacture of chemical products. North central Europe has many raw materials for making chemicals, and German chemists are especially good at finding how to make and use chemicals. The raw materials include potash, salt, tar obtained from coal, and alcohol made from potatoes. These chemicals are used to make such things as soap, glass, pottery, ammunition, and fertilizers. Near Staszfurt are the richest known *potash* beds in the world. The potash is mined and used for making fertilizer, many different chemicals, and medicines. Breslau and other cities in Silesia are also known for their chemical plants.



Courtesy German Tourist Information Office

These women are painting designs on plates in a factory near Frankfurt.

TRADE AND TRANSPORTATION

Some of the most important and ancient trade routes of Europe cross the North Plain. Railways now follow these routes. One of these old east-west trade routes crosses the Wisla at the site of Warsaw (Warszawa), the Elbe at Dresden, and the Rhine River at the site of Cologne (Köln). North-south trade routes run from the Baltic Sea southward to the Mediterranean and Black seas.

Where trade routes crossed, towns grew up. Where railway lines cross each other you will always find a busy city. Trading cities are also often found where unlike regions meet.

A fine system of waterways. Across the North Plain flow many navigable rivers. The most important are the Wisla, the Oder, the Elbe, the Weser, and the Rhine. Many tributaries from east and west flow into these main rivers, and many of the shallow streams have been dredged to make them navigable. Most of the land on the North Plain is fairly level so that often only low divides separate the tributaries. It was not very difficult, therefore, for the people of the North Plain to connect most of their waterways by means of canals.

Sea gateways. Among the important seaports of the continent of Europe are Hamburg, Bremen, Stettin, and Danzig. Study the maps to see how each of these ports is located in respect to the important rivers of the North Plain. Which ports are on the North Sea? Which ports are on the Baltic? Find Kiel, located at the east end of the Kiel Canal.

Hamburg. Hamburg is on the right bank of the Elbe, about seventy-five miles from the North Sea. Look at the map on page 212 and you will see that Hamburg is one of the terminals of the North Atlantic trade route. It is also within easy reach of the Rhine-Ruhr region, which is the chief industrial centre of Germany. These advantages make Hamburg one of the great ports of the world. It carries on a large transit trade, and one section of its harbor is set aside as a *free port*. There, goods coming into the harbor can be transferred from one ship to another free of *import duties*.



Courtesy German Tourist Information Office

A view of the harbor at Hamburg. The second ship has an English name.

Hamburg is an industrial city as well as a great seaport. Great quantities of imported grain are ground in the flour mills of Hamburg. Beet sugar, chemicals, furniture, and many kinds of machinery are made there. Modern ocean liners of the very largest size are built in Hamburg's shipyards.

Bremen. Bremen has become a sea gateway to the Ruhr region. Ships sail forty-six miles up the Weser River from the North Sea to reach Bremen. Huge cargoes of imported goods, such as cotton and grain, are unloaded. Products from Bremen's many factories, shipyards, mills, and machine shops are hauled to the docks for export. Navigable waterways connect Bremen with the great iron and steel centres of the Ruhr Valley. Largely because of this close connection, Bremen is favorably located for the building of ships.

Stettin and Danzig. Stettin and Danzig are the most important Baltic ports on the North Plain. Stettin is at the mouth of the Oder River, which makes it a sea gateway to the industrial district of Silesia. The most important cargo carried on the Oder is coal. But the Oder River carries only about half as much cargo as is carried by the Elbe. Knowing this fact will help you to account for the difference in importance between Stettin and Hamburg. Danzig is about three miles from the mouth of the Wisla. It serves as a sea gateway to the farming and manufacturing regions that lie to the east and south of it.

Berlin, the German capital. Berlin began to grow in 1870, when it was made the capital and the centre of the transportation system of the new country of Germany. Both of these functions brought much business to Berlin, and it soon grew to be the largest industrial city in Europe, as well as a great commercial centre. Some of its industries are meat-packing, metal refining, printing and publishing.

Having had a late and rapid growth, Berlin looks newer and more modern than most European cities. Because it is built on land that is almost level, its streets are wider than those of most European cities and their pattern is more regular.

The capital of Poland. Warsaw is located on the Wisla River. Find the city on the map. The plains all around the city are level and fertile, but Warsaw, itself, is built on a hill that rises above the river.

For a long time the city was a marketing centre for the products raised in the surrounding countryside. In more recent years, manufacturing has been developed there. Many different things, such as shoes, textiles, sugar, and machinery, are made in the factories. All over Poland complete dependence upon agriculture has changed to equal dependence upon both manufacturing and agriculture. The fact that Poland received the Silesian district after the First World War has helped it to become more industrialized.

THE CENTRAL UPLAND REGION

Southward from the shores of the North and Baltic seas, the land of central Europe gradually slopes upward from low plains to highlands more than a thousand feet above sea level. This higher land between the North Plain and the Alps is known as the Central Upland region. Many rivers have cut valleys into it, and it is crossed here and there by low mountain ranges. The physical-political map shows the altitude of its various parts.

FARMS AND FORESTS

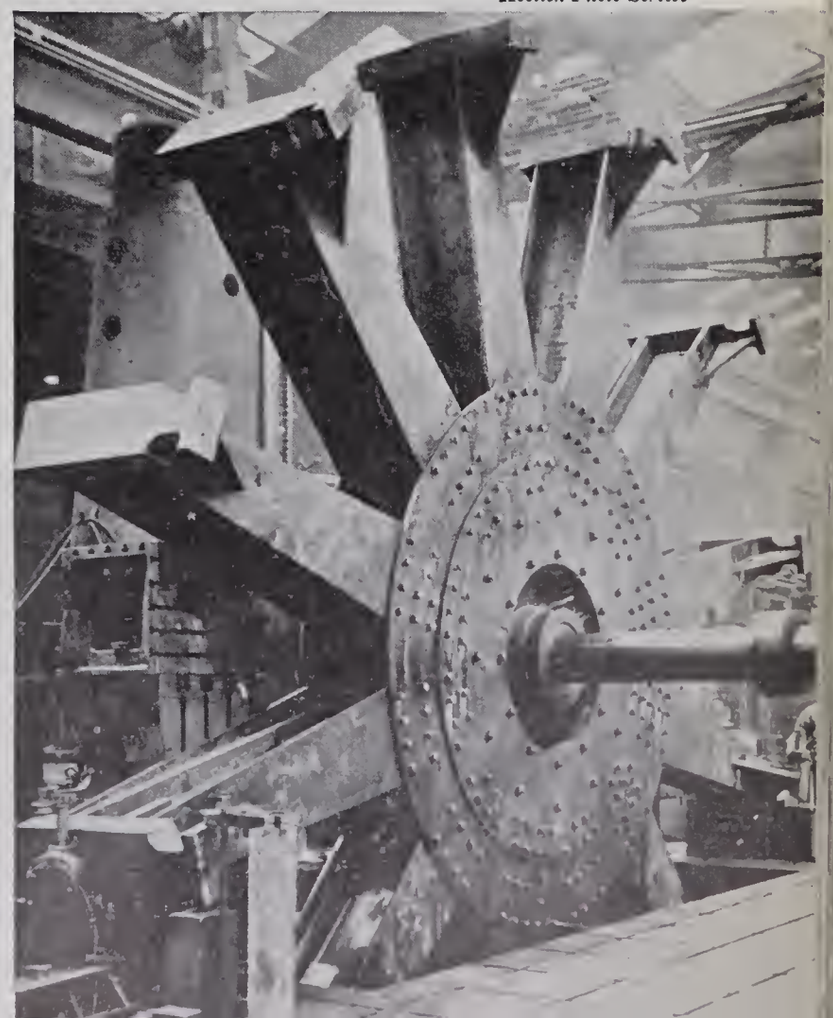
The sheltered valleys in the western part of the Central Uplands are noted for fruit and grain. In many places orchards and vineyards cover the slopes, while tobacco and grain crops grow on the lands along the rivers. There we find quaint old towns that have stood for centuries, and castles built in the Middle Ages look down from the hills.

East of the Rhine Valley lies a mountainous region known as the Black Forest. Find this region on the physical-political map, pages 198-199, and on the map on page 242. There the land is rugged, but the slopes are not too steep nor the weather too cold for trees to grow. Thick, dark forests of firs gave the region its name. Fire prevention is practised, only mature trees are cut, and no one may destroy a tree without planting another one.

Many farmers, as well as lumbermen, live in the Black Forest. On some of the lower slopes are vineyards and orchards of apple, cherry, and plum trees. Higher up, where it is cooler, barley, rye, and potatoes are raised wherever level places can be found. Still higher up, where the *timber line* is reached, evergreen forests give way to bushes and grass, white with snow in winter and green in summer. Herds of dairy cattle are grazed

At the Skoda Works in Plzeň heavy machinery is being made for a hydro-electric plant.

Kostich Photo Service





U.S. Signal Corps Photo

The fruit trees, the well-kept, hilly farm lands, and the wooded slopes in this scene in Czechoslovakia are typical of the countryside in the regions of Bohemia and Moravia.

on these high mountain pastures each summer.

Locate the Bohemian Forest on the map on page 242 and then find it on the physical-political map, pages 198-199. The Bohemian Forest is similar to the Black Forest in many ways.

Farming on the Bohemian Plateau. East of the Bohemian Forest is a region called Bohemia. It is a plateau, nearly surrounded by low ranges of mountains — the Bohemian Forest, the Ore Mountains, and the Sudetes. To the east it merges into a hilly region called Moravia. Both Bohemia and Moravia are parts of Czechoslovakia. Find them on the map on page 242.

The Elbe River, which flows through the centre of the plateau, is a natural outlet for this fertile region. It flows northward between the Ore Mountains and the Sudetes. Dresden, Leipzig, and Chemnitz are all in favorable positions for trading with this productive region.

Intensive farming is carried on in Bohemia. Sugar beets are the most valuable crop, but they are rotated with other crops. Look at the maps on pages 208, 244, 256, and 323 to see what these crops are. *Rotating the crops* helps to keep the soil fertile. Dairying is important, and sheep are raised on lands too hilly to cultivate. Here and there in sheltered valleys among the fields and pastures are orchards and vineyards. In general, you may think of Bohemia as a region of progressive and prosperous farmers.

INDUSTRY AND TRADE

The Central Uplands have rich coal and iron deposits in the eastern part, on the Bohemian plateau, but there are few raw materials for factories outside of lumber for making wood products, sand for making glass, and *kaolin* for making pottery.

Specialties of the Central Uplands. In many parts of the Central Uplands that have little in the way of raw materials, the people make things that demand a vast amount of work and skill and use only small

supplies of raw materials. Many of the workers make toys. Toymaking is especially important in and around Nürnberg, which you can find on the map on page 242. The people of the region around Nürnberg now use their skill in making other articles as well. Their manufactures include music boxes, violins, watches, cuckoo clocks, and jewellery. All need much labor, but little material. Not far from Leipzig is the town of Jena. There skilled workmen specialize in making the kind of glass used in telescopes, microscopes, and cameras. People all over the world came to Germany when they wanted the very finest lenses. Munich (München) has a reputation for making fine and delicate scientific instruments.

Manufacturing in Bohemia. Bohemia has several raw materials that can be used in its factories. It has iron for steel, kaolin for china, sand for glass, and timber for making paper and wood products. Large supplies of coal provide fuel and raw materials for the chemical industry. Gasoline and fertilizer can be made from *lignite*. Bohemia also imports some raw materials. Among these imported goods are hides and wool.

Coal and iron ore are mined in the region that surrounds Prague (Praha) and Plzeň, and there the iron and steel industries of Czechoslovakia have their chief centre. Large quantities of sugar beets are raised in the surrounding farm lands, and the manufacture of beet sugar is very important in Prague. In fact, so much sugar is made there that it is one of the chief exports of Czechoslovakia. Other factories make leather products, such as gloves and shoes. Still other factories make the glassware for which Bohemia has long been famous. There is good sand in Bohemia.

Prague, the capital of Czechoslovakia. The sites of many cities of Europe were chosen as places of safety. Prague was first built where a river curves between two hills. A castle was built on each of the hills to protect the settlement.

Prague has a great many different kinds of industries. Among the important products are river barges and heavy machinery for farms, factories, and railways.

LIVING IN THE ALPINE REGION

Turn to the physical-political map and trace the Alps from the Mediterranean Sea to Hungary. You can see that one part of these high mountains extends north and south along the boundary between Italy and France. The east-west portion of the Alps is shared by Switzerland and Austria.

THE LAND OF THE SWISS

Switzerland is divided into three regions. The high Alps cover more than half the country. The low Jura Mountains extend along the western part between Switzerland and France. Between these two areas of mountains lies a rolling plateau. The physical-political map shows that this region slopes toward the North Sea.

Although Switzerland is smaller than Nova Scotia, its population is about the same as that of Ontario. Almost all the people live in the lower land. In the mountains, the valleys are the best places for villages and farms.

The farms of Switzerland. A quarter of the population makes a living by farming, though only a small part of the land is suitable for agriculture. The farms are small or middle-sized, and every plot of land is tilled,

no matter how small it is. None of the soil of Switzerland is very fertile, but, where it is warm enough, farmers raise grain. Orchards and vineyards extend up the mountain sides as high as the fruit will grow.

Much more important than raising crops is stock-raising. The high mountain lands that cannot be used for growing crops can be used to good advantage as pasture lands. Switzerland is famous for its fine breeds of cattle and depends upon them for much of its income. Cheese from Switzerland is sent all over the world. Your local grocery store probably has some. Condensed milk, butter, and milk chocolate are also well-known Swiss products. The Swiss must import food from foreign countries.

Making a living by manufacturing. There is no coal in Switzerland, and there are few raw materials, but this does not mean that little manufacturing is carried on. The Swiss buy raw materials from other countries and ship out finished products. Almost half the people of Switzerland make a living by manufacturing. Some of the work is done at home, some in factories. Many of the machines are run by hydro-electric power.

Steel is imported and used for making various kinds of machinery, automobiles, watches, and scientific instruments. The textile industry is also important. Cotton, wool, and silk are imported and made into beautiful cloth, most of which is exported. Cloth sent to Switzerland from other countries is skilfully embroidered by Swiss women. Chemicals, especially dyes and medicines, are manufactured.

Such things as watches, embroidery, silk ribbon, and milk chocolate illustrate the nature of Swiss industry. These articles require small amounts of raw materials but a great deal of labor and skill. Because they are small, transportation costs are not high.

Reaching the outside world. There are three main highways of trade that lead from Switzerland to the outside world. The Rhine River and the Rhine Valley provide a route to the North Sea, where Swiss imports and exports are handled at Rotterdam and Antwerp. You will remember that these great ports are sea gateways, not only to the Netherlands and Belgium, but to many parts of central Europe as well.

Raising livestock is one of the many ways in which the people of Switzerland make their living. The cattle have been taken to this high mountain pasture to graze during the summer months.

Philip Gendreau



A second route passes through the St. Gotthard Tunnel in the Alps and continues southward across the plains of northern Italy to Genoa (Genova), a great Italian seaport. A third route goes through France by way of the Rhône River Valley to Lyon and on to the port of Marseille. Of these routes, the Rhine Valley is the most important. Turn to the physical-political map and trace these three routes.

Valuable scenery. Scenery is a very valuable resource for the Swiss people. It has been estimated that more money is brought into Switzerland by tourists each year than by any other means. In summer and winter alike, Switzerland attracts thousands of tourists. It has become a land of hotels and excellent transportation facilities. Caring for visitors supplies work for thousands of people.



Ewing Galloway

An old castle overlooks this Austrian village. There are farms in the valley.

THE LAND OF THE AUSTRIANS

The physical-political map on pages 198-199 shows you that the Alps extend eastward from Switzerland over more than half of Austria. The Austrian Alps, however, are lower and broader than the Swiss Alps. As a result of their lower altitude and more gentle slopes, the Austrian Alps have more forests and are better for farming. They are also richer in various kinds of mineral deposits. The Austrian Alps, however, lack one advantage that the Swiss Alps have. They are not so attractive to tourists.

The work of the people. The Austrians are engaged in many kinds of work. More than half of them live in rural communities. They make their living by raising crops and selling their surplus products in the cities, particularly in the capital city Vienna (Wein). The part of Austria that is best for farming is in the Danube Valley, where the land is lower. There, rye and potatoes are the leading crops. The mountain valleys are also used for growing crops, and farm lands extend up the slopes. But the farmers cannot raise all the grain that is needed, and flour and cereals are among Austria's imports.

Much land is suitable only for pasture. Most farmers keep cows, sheep, goats, and pigs. In the west, where farmers are influenced by the example given them by the Swiss, dairying is more important than it is in the east. Some cheese is exported, but most dairy products are used within Austria. Sheep supply coarse wool and some meat for the local markets, but the Austrians must import additional meat and textiles.

The Austrians have taken good care of their forests for a long time, and they have forest products such as pulp and furniture to sell. Many wooden articles are made in homes and in factories.

In and around the city of Vienna, manufacturing is very important. The iron and steel industries produce a variety of products, from needles and screws to locomotives. The textile industry is also important, and many thousands of workers are employed in textile factories.

Resources and transportation. Austria has some coal, but not enough to supply the needs of its industries. However, the swift mountain streams can provide enough hydro-electric power to run the railways and factories of the country, but this resource has not as yet been very extensively developed.

The map on page 202 will show you that there are valuable iron deposits in the east. Austria also has lead, copper, and zinc mines.

The Danube River provides a navigable east-west waterway. It flows southeastward into a part of Europe where there is great need for manufactured articles of all kinds, because most of the people are farmers. This farming area supplies many of the foods and raw materials needed by Austria, as well as providing a market for surplus manufactured goods.

On the physical-political map find the Brenner Pass through which goes the important route that extends from Munich to northern Italy.

Vienna, the leading city of Austria. Vienna is a very busy industrial centre, and a commercial gateway to all of southeastern Europe. There are a number of reasons for this. In the first place, it is on the Danube River, which is navigable both above and below the city. In the second place, it can obtain products and raw materials from both the plains and the mountains. In the third place, it is situated at the southern end of an easy route which extends northward through the mountains to the Great Lowland Plain. In the fourth place, it has become a centre of European air routes.

Actually, Vienna is too large a city for a country the size of Austria, but it grew to its present size when it was the capital of an empire that, until 1918, included Austria, Hungary, and parts of Czechoslovakia and Poland.

MIDDLE AND LOWER DANUBE REGIONS

You have learned that the Danube has its source in the wooded hills of the Black Forest. Turn to the physical-political map and trace the Danube across central Europe to the Black Sea. Its upper course is through the Central Uplands. You can also trace its course on the map on page 242.

Soon after leaving Vienna, the Danube cuts its valley between the Alps and the Carpathians. It then flows east and south across the Plains of Hungary. This part of its course is known as the middle Danube and is used more than any other section of the river for transportation.

After leaving the Plains of Hungary, the Danube rushes through a narrow, two-mile mountain *gorge*, known as the Iron Gate. Leaving the gorge, the river makes a broad curve northward through the Wallachian Plain. Then it turns sharply eastward and builds its *delta* in the Black Sea. From the Iron Gate to the Black Sea the river is known as the lower Danube.

THE MIDDLE DANUBE REGION — A LAND OF FARMERS AND HERDSMEN

If you look at the vegetation map on pages 12-13, you will see that Hungary is a region of grassland. The Plains of Hungary are as flat as our prairies and contain fertile black soil.

The surrounding highlands are mainly responsible for producing the grassland, for they cause the winds to lose most of their moisture before they reach the plain, and the rainfall is therefore light. Fortunately, most of it comes in the spring, when the crops need it most. The climate of the plains is continental. The summers are exceedingly



Burton Holmes from Ewing Galloway

The Danube and Sava rivers meet here at the edge of the city of Belgrade, Yugoslavia. All countries that border on the river use the river to transport their products to and from the Black Sea.

hot, and in the winter icy winds sweep across the open country.

As you might expect, the crops of the Plains of Hungary resemble those of the Great Plains of North America. The environment is much the same in both places. Wheat and corn are the chief crops in the Danubian plains. If you look at the product maps, you can find what the others are. Herds of cattle and horses also wander across the plains. Hogs are raised.

You can see on the map that not all of Hungary is a low plain. Where there is rolling or hilly land, the slopes are used for orchards or vineyards. Sheep are grazed in the foothills of the Carpathian Mountains.

The farms in the Plains of Hungary are generally small and the farming methods rather backward. The disruption caused by two world wars has helped to prevent Hungary from increasing her production of food by using better methods and machinery. The poverty of the people has also prevented them from changing to more modern methods.

Hungary has very few minerals or other raw materials for factories. It has large supplies of bauxite, but its supply of coal is scanty, and what there is is poor. Manufacturing is based chiefly on farm products. There are flour mills, sugar refineries, tobacco factories, and wine factories. Some iron ore is imported for use in a few iron and steel mills. Most Hungarians are farmers or *herdsmen.*

Budapest, capital and largest city. Budapest has become the trading centre to which most Hungarian products are sent to be manufactured or for distribution. Many of these products are shipped by way of the Danube. Find Budapest on the physical-political map. Railways coming from almost all directions meet at Budapest. It is a gateway between two plains.

Flour milling and the making of steel have long been the leading industries of Budapest, but new industries are slowly growing in importance. Among the new factories and plants to be seen in Budapest are those making textiles and chemicals.

THE LOWER DANUBE REGION

Romania is divided into a number of regions. As you read about each one, find it on the physical-political map and try to picture the things and places you read about.

Transylvania is in the western part of Romania. You can see on the map that the western part of Transylvania is an extension of the Plains of Hungary. Farther east the land is hilly and thickly wooded. These



Eastfoto

A fair in Hungary. This is a prize bull. Notice the clothes the man is wearing.

forests provide an abundance of timber. In the sheltered valleys, there are fruit orchards, grain fields, tobacco fields, and vineyards. Transylvania contains many different minerals, too. There are salt mines, coal mines, iron mines, and oil wells.

Southeast of the Transylvanian Alps lie the rich plains of the lower Danube. Fertile lowlands extend to the north, too. In this area you will find the best farm lands in Romania. Huge crops of corn and wheat are harvested, and millions of cattle and sheep graze in the pastures. Some of the cattle are used as work animals.

The region along the Black Sea, near the port of Constanţa, has only a light rainfall. Because pastures are thin and dry, the region is used chiefly for raising sheep and goats. The goats supply milk as well as wool and meat. Toward the south, the land is higher, and the rainfall heavier. There the farmers can raise both corn and wheat.

Romania's rich oil fields. There are only a few countries in Europe where oil has been found. Next to Russia, Romania has the richest oil fields. They are found in the region east of the Transylvanian Alps. There is a big oil refinery at Ploeşti, but most of the crude oil is shipped out of the country.

Industry and trade. Romania produces many raw materials that are needed in other parts of Europe, but it has little manufacturing of its own. Romania has many kinds of minerals, but outside of oil, mineral production has been small. Sheep provide wool, cattle provide hides, and forests provide lumber.

The main Romanian exports are wheat and oil, and the main imports are manu-

The vast, level stretches of the Plains of Hungary are ideal for the raising of cattle and corn. Do these plains remind you of any part of Canada?

Ewing Galloway



factured goods. Most of the trade is carried on with other European countries.

There are no great industrial centres in Romania, but there are a few cities where some manufacturing is carried on. The nearby forests provide wood for furniture factories, paper mills, and sawmills in Braşov. There are also tanneries and woollen mills.

Bucharest (Bucureşti) is the capital and the largest city in Romania. It has become an important railway centre and carries on an extensive trade, but it has few factories outside of flour mills.

LIVING IN THE BALKAN REGION

Turn to the physical-political map and find the part of central Europe that lies south of the Danube River and between the Black and Adriatic seas. The countries that share this region are called Balkan countries. Balkan is a Turkish word meaning "wooded heights." This is a good name for these countries, for the region is chiefly a land of forested mountains.

A land of farmers. Most of the people in Yugoslavia and Bulgaria make a living by farming. There, as in many parts of Europe, the people do not build farmhouses on their land. They prefer to live together in villages and to go out each day to their farms.

The densest population and the best farm lands in the Balkans are to be found in the valleys of the Danube and its tributaries. The farmers on the plains have large fields of corn, wheat, and sugar beets.

Turn to the physical-political map and find the valley of the Mariça River. There the winters are mild, because the mountains shelter the valley from cold winds. The farmers raise grain, fruit, cotton, and tobacco. The climate, like that of Mediterranean countries, favors the growth of mulberry trees. As a result, many people raise silkworms, and silk production is important. Silkworms eat mulberry leaves.

Look at the map and notice how much of the Balkan region is mountainous. These highlands contain a variety of minerals, but little use has been made of them. The eastern slopes of the mountains are thickly covered with forests of oak and beech trees, and large quantities of lumber are exported, especially to the unforested lands of western Europe. The people gather beechnuts, press out the oil, and use it instead of butter. The mountain farmers in the Balkans, like mountain farmers in nearly all parts of the world, keep large numbers of farm animals. Pigs are fattened on acorns and beechnuts, and mountain pastures are used for cattle, sheep, and goats.

In the little mountain valleys, farmers raise wheat, corn, vegetables, tobacco, and

Logs sliding into a river in Romania. Lumbering is one of the most important industries in this country.

Pix Publishing, Inc.



fruit. In central and southern Yugoslavia the valleys are famous for their orchards of plum trees. Each year millions of pounds of plums are dried and exported as prunes.

Balkan capitals. Turn to the physical-political map and find the capitals of Yugoslavia and Bulgaria. Belgrade (Beograd) is situated at the centre of land and water routes. It is the trading centre of the rich plains that surround it. High mountains make it difficult, however, for the people to reach the Adriatic coast from the interior of Yugoslavia.

Belgrade is the northern gateway to a famous old trade route, the Morava-Vardar Valley. Turn to the physical-political map and find the Morava and Vardar rivers. For hundreds of years, the Morava-Vardar Valley has been a highway of trade and travel. Today a railway follows it. The railway line divides at the town of Niš in the Morava Valley. One line follows the Vardar Valley southward to the Aegean Sea. Another line follows the Mariça Valley southeastward to Turkey and Asia. On the latter line is Bulgaria's capital, Sofia (Sofija). Draw this railway line on your outline map.

Sofia has connections with two Black Sea ports. It can easily ship goods to Turkey and to countries farther east, and it can also send its goods to central European markets. Most of the things manufactured in Belgrade and Sofia are needed at home. Only products such as attar of roses, raw silk, and dried fruits are exported.

THE GEOGRAPHY WORKSHOP

I. THE WORLD IN YOUR COMMUNITY

If you were a radio operator about to beam a broadcast to Romania, in which direction would you point the beam? In what countries might the broadcast be picked up?

Is any part of central Europe directly east of your home? If so, find a central European region that is in about the same latitude as your own community. How does it compare with your region in rainfall, growing season, vegetation, and population?

II. PEOPLE AND PRODUCTS

You can probably find people in your community who can tell you about the western part of central Europe. In recent years many new Canadians have come to us from

Maps showing where barley and potatoes are grown in Europe.





central and other parts of Europe. Have you any of these people in your community? Is your community doing anything to help them? Can your class do anything to help make them happier and better Canadians?

You cannot expect to find many articles made in central Europe. Bohemian glass and embroidered linens from Switzerland are fairly common. Watches, cheese, and chocolate are also imported from Switzerland. You may find cameras, scientific instruments, clocks, toys, and musical instruments from Germany. From the other countries of central Europe, Canadians import very little.

All of the following people were born in the countries of central Europe: Ludwig van Beethoven, Joseph Conrad, Marie Curie, Anton Dvorák, Jakob Grimm, Thaddeus Kosciusko, Franz Liszt, Ignace Jan Paderewski, Casimir Pulaski, Whilhelm Konrad Roentgen, Franz Schubert, Kate Seredy, Charles Proteus Steinmetz, Johann Strauss, Nicola Tesla. These are all people we should know about. We read their books, listen to their music, benefit by their discoveries and inventions, or honor them for other contributions they have made to the world. What is each of these people noted for?

III. NEWS FROM CENTRAL EUROPE

Some of the countries of central Europe are small and do not have a variety of resources. As you discuss current events in these countries, pay special attention to news items indicating that these countries exchange raw materials and products.

IV. WHAT YOU CAN READ FROM PICTURES

The picture on the right was taken in Bulgaria. If you could read everything in the picture, you would recognize this for yourself. The people do not follow western styles of dress. If you were an expert on European costumes, you would have recognized them as Bulgarians from their clothes. How do their clothes differ from the clothing of people in industrial western Europe?

What is the round opening in the ground? How do you know?

What evidence do you see that the land is less intensively cultivated than in most of industrial western Europe?

What evidence do you see that this picture was not taken in a highly industrialized region? That is a hard question, but you can answer it if you study the picture very carefully.

V. CAN YOU SORT THEM?

The following list includes crops that are especially important in the Central Uplands and crops that are especially important in the North Plain. Sort them into two lists according to region. You will need to put some of the crops in both the Central Uplands and the North Plain.

barley	oats	tobacco	sugar beets
grapes	rye	potatoes	orchard fruits

Which of the Central Upland crops are grown on slopes and which are grown on more level land in valleys? Compare the valley crops with those grown on the North Plain.

Ewing Galloway





MEDITERRANEAN EUROPE

Ringing the Mediterranean Sea is a wall of mountains that encloses the Mediterranean region, separating it from the rest of Europe. By protecting this region from both the cold north winds and the moisture-bearing west winds the mountains help to create the distinctive Mediterranean climate.

Mediterranean climate. Wherever a climate similar to that of Mediterranean lands is found, it is known as a *Mediterranean climate.* Southern California is one of the places that has such a climate. Lands with Mediterranean climates are bright and sunny. Very little rain falls in the summer, and even in the winter, when most of the rain comes, there are many bright, clear days with blue skies. The winter temperatures are mild, although there are occasional frosts. Snow rarely falls except on the highlands. Mediterranean summers would remind you of desert weather: the days are hot, but the nights are pleasantly cool, it seldom rains, and, unless there is irrigation, the landscape, which was fresh and green in winter, becomes dusty and brown under the hot summer sun.

Wherever the Mediterranean type of climate is found, farmers can raise *subtropical,* that is nearly-tropical crops. *Subtropical products* include olives, citrus fruits, grapes, vegetables, and winter wheat. Because of its mild winters, Mediterranean

Europe, like southern California, is able to send fruits and vegetables early in the season to densely populated regions where winters are longer and colder.

The importance of the sea. The Mediterranean Sea lies in a large, irregularly shaped basin which extends eastward from the Atlantic for more than 2000 miles. It is a warm sea, for its waters are heated during the long, hot summers, and they do not cool off in the cool, but short, winters. Because the Mediterranean Sea is almost entirely enclosed by land, it does not receive cold currents from polar regions. The warm sea helps to prevent the winter temperatures in Mediterranean countries from going too low.

Narrow passages connect the Mediterranean Sea with other bodies of water, and these passages are important in ocean trade. Many ships use trade routes that go through the Mediterranean, and seaports have developed along these routes. Since the building of the Suez Canal, the Mediterranean route has been the shortest way to reach India and the East. Russia, the *Near East*, North Africa, and Mediterranean Europe in themselves keep the sea lanes of the Mediterranean busy.

WHAT WE CAN LEARN FROM MAPS

LOCATING MEDITERRANEAN EUROPE

1. Mediterranean Europe is made up of the Iberian, Greek, and Italian peninsulas, the southern coast of France and the lower Rhône Valley, Albania, and the coastal lands of Yugoslavia. The countries of Spain and Portugal share the *Iberian Peninsula.* Which of these does not border the Mediterranean? Find the peninsulas occupied by Italy and Greece. What bodies of water border each of these peninsulas?

2. Print in the right places on your outline map of Europe the names of the Mediterranean countries and the seas that border them. Also find and print in the right places the names of the following islands: Crete, Sicily, Sardinia, Corsica, Malta, and the Balearic Islands. To what country does each belong? Color the part of the map that includes all the lands of Mediterranean Europe.

THE MEDITERRANEAN SEA

1. Turn to the map on pages 2-3. Can you find what part of Canada is in the same latitude as the northern part of the Mediterranean Sea? You can find the answer to this question by laying a ruler straight across the map.

2. On the world map you can see that the Mediterranean Sea lies between Europe and Africa. In what direction from the Mediterranean Sea is the Red Sea? The Red

Two Spanish women wearing typical dresses of the region around Castile.

Courtesy Spanish Tourist Department





Philip Gendreau

The gaily colored houses and green vineyards of Amalfi climb up the terraced mountain sides from the blue sea. This city is typical of the cities of the peninsula of Italy.

Sea is a part of the Mediterranean route that connects the Atlantic Ocean and the Indian Ocean. What canal connects the Red Sea and the Mediterranean Sea?

3. Turn to the physical-political map on pages 198-199 to find the name of the strait that connects the Atlantic Ocean and the Mediterranean Sea. About how wide is this strait? A high point of land known as the Rock of Gibraltar overlooks the strait.

4. In what direction from the Mediterranean Sea is the Black Sea? Locate and name the seas and straits through which a ship would go to reach the Black Sea. You can find the names of these bodies of water on the map on page 242.

5. Find the Adriatic Sea on the physical-political map. What countries border the Adriatic? About how far is Brindisi from Venice (Venezia)? Look on the map on page 242 for these places.

6. Use the map on page 212 to find the routes that ships can follow in going from Liverpool to Calcutta. How much distance is saved by ships using the Mediterranean route? France has colonies in North Africa and in Asia. What valley and what port help France to make use of the Mediterranean route?

THE LAND AND ITS PEOPLE

1. Most of Mediterranean Europe is made up of highlands. Turn to the population map on pages 14-15 and notice that the density of population in Mediterranean Europe varies from place to place. In what parts of the region do most of the people live? What does the physical-political map show about the altitude of these places? Perhaps you have discovered that the most densely populated area is in a river valley. What is the name of the river? Into what body of water does it flow? Find the name of the river and the body of water on the map on page 242.

2. The Iberian Peninsula is largely a plateau. What does the physical-political map show about its altitude? Rainfall on a plateau is usually light because winds blowing up the slopes of the plateau cool off and lose their moisture. Many plateaus are rough; the soils are often thin and stony. Keeping this in mind, would you expect the Iberian Peninsula to be densely populated? Turn to the population map on pages 14-15 to check your answer.

3. The Pyrenees mountains separate Spain from France. Find other mountain ranges on the Iberian Peninsula.

4. Look at the physical-political map and find the place in Switzerland where the Rhône River rises. Find the lake into which it flows. From this lake it flows to the southwest toward Lyon, where it makes a big bend to the south. At Lyon, a large tributary from the north joins the Rhône. What is its name? This river gives the Rhône Valley easy connections with northern France. Find the port near the mouth of the Rhône River.

5. What mountains extend southeastward through the Italian Peninsula? Mount Vesuvius is a famous volcano in Italy. Find it on the map on page 242. Volcanoes sometimes pour out great masses of melted rock called *lava*. When some types of volcanic rock materials decay, they form a very rich soil.

6. Is most of the land of Greece high or low? Where is the largest area of lowland? Greece includes many islands. In which sea are most of them located?

7. How does the coast of Yugoslavia differ from the coast of Italy? Notice that a part of the coast of Yugoslavia is called Dalmatia. In what way does Dalmatia differ from Albania? On the physical-political map find the Dinaric Alps and the mountains of Albania. These mountains separate Albania and the Mediterranean portion of Yugoslavia from central Europe.

8. Which of the Mediterranean countries has the most lowland? Now look at the population map on pages 14-15 to see which of the peninsulas is the most thickly settled. What relation do you see between land surface and density of population?

Highlands are likely to be sparsely settled because of thin soils, a short growing season, and difficult transportation. Give examples of sparsely settled highlands in Mediterranean Europe.

CLIMATE AND VEGETATION

1. Southern Italy is a good example of a region that has a Mediterranean climate. Turn to the rainfall map on pages 8-9. How much rain has southern Italy?

2. The winds in Mediterranean Europe blow chiefly from the west. How does this fact help to explain the areas of light rainfall in eastern Spain and of heavy rainfall on the coast of Yugoslavia? You may use the physical-political map to help you to answer this question.

3. Does the latitude of Mediterranean Europe help to make the winters mild? Turn to the physical-political map and trace the parallel of 45° north latitude across Europe. Notice that it passes through northern Italy. Now turn to the map on pages 30-31. Find the line of 45° north latitude and trace it from sea to sea. What provinces and states does it cross? This area often has severely cold weather in winter, with January temperatures averaging from 10° to 20°. The Po Valley of northern Italy, on the other hand, which is in the same latitude, has an average January temperature of about 40°.

The reason for this difference is that high mountains shelter the Po Valley from cold north winds. Now look at the map and find what mountains are north of this valley. Mediterranean Europe has other river valleys that are sheltered from cold winds by mountains. Perhaps you can find one.

4. Use the physical-political map to find the Riviera, the mountainous coastal land extending from southern France into northern Italy. The Riviera is a popular winter

resort. The temperatures are pleasantly warm, and there are many sunny days. Can you tell why the winters are mild?

5. The average July temperature in most of Mediterranean Europe is just a little warmer than that of southern Ontario. Would you expect the growing season of Mediterranean Europe to be long or short? Turn to the map on pages 10-11 to check your answer. How does the length of the growing season in most of the Mediterranean lands compare with that of Scandinavia? with that of central Europe?

6. Turn to the map on pages 12-13 and notice the kind of natural vegetation that is found in most of Mediterranean Europe. This is to a large extent a region of *dry forests*. The trees and shrubs of dry forests are able to live through the long, dry summers with only scanty supplies of moisture. The trees usually stand farther apart than they do in other forests.

Olive, fig, and almond trees are suited to the Mediterranean climate. On the higher mountain slopes, where there is more rainfall and where the temperatures are lower, there are various broadleaf forest trees. Chestnut, beech, and oak trees grow on these slopes. Still higher up in the mountains, forests of pine and cedar cover many of the slopes. These vegetation belts of the mountains do not show on the map.

Grasses that grow in western and northern Europe cannot live in most parts of Mediterranean Europe. Only scanty pastures are found in most of the highlands.

USING NATURAL RESOURCES

Mediterranean Europe has few natural resources. It is a region where there are more highlands than lowlands, but the mountains have few minerals and scanty forests. Only a small proportion of the people can make a living through mining or manufacturing. Most of them depend upon the land to provide a living for them; it is often not a very good provider.

MAKING USE OF THE LAND

The best farm lands of Mediterranean Europe are found in the river valleys and along the seacoast. Because level land is scarce, many steep slopes are terraced, to provide more level land and to prevent soil from being washed away. Terraces are made by building a series of walls up a slope. The earth behind these walls may be planted without danger of the soil being washed away. You will find a picture of terraces on page 260.

In Mediterranean Europe, the growing season is long, but the climate is dry and the farmers must irrigate their land or else cultivate plants that can mature in dry weather. By looking at the rainfall map, you can see that most of this region has an annual rainfall of 20 to 40 inches. Some parts, however, have less than 20 inches. Remember that in such hot, sunny lands, water dries up quickly, and that most of the rain falls in the winter.

Olives and grapes. Olive trees are ideally suited to a Mediterranean climate. They live through rainless summers even without irrigation, but they cannot stand much frost. The olive is especially important in Mediterranean Europe because it supplies the oil that the people need in their diet. Mediterranean people have very little butter, cream, or lard because the dry pastures are not good for grazing dairy cows, and there is little feed for pigs. They are not able to use the same fats and oils that we do.

The upper map on page 264 shows the principal olive-growing areas of the Mediterranean region. Locate the most important

olive-producing regions of Europe. Why are olives not grown in northern Italy?

The grape is another important crop of Mediterranean Europe that can grow in a dry climate. The grapevine can live through the dry summer because it has long roots. Of course, it bears more fruit if it is irrigated. The Romans, long ago, found that the grapevine would do well even on the steep and stony hillsides of the Italian peninsula; they have been grown there ever since. From Rome, grape-producing spread to all Mediterranean coastal lands. This region became the leading grape-producing area of the world.

Look at the map on page 264 to see where grapes are raised in Mediterranean Europe. Notice that grapes are found in abundance in northern Italy, while olives are not produced in that area. Notice also the amount of grapes grown in France.

Greece is famous for the vineyards on the slopes that border the Gulf of Corinth that produce small, seedless grapes called currants. These are dried and shipped to many parts of the world. Find this gulf on the map on page 242.

Figs and almonds. Figs and almonds are two tree crops of Mediterranean lands. They can be cultivated in places that are too frosty for olives and citrus fruits. The most productive fig orchards are found near the Mediterranean shores of Asia, but fine figs are produced in Greece, on both the mainland and the Aegean islands. Almonds are exported from Spain and Italy.

Grain crops. A Mediterranean climate is the best one for wheat. The wheat plant needs plenty of moisture during the early part of its growth, but when it is ready to ripen, it needs bright sunshine and dry weather to produce grain of the highest quality. In Mediterranean lands, wheat is planted in the autumn and grows slowly during the winter. By the time the dry season arrives, the wheat is in the final stages of its growth. The map on page 208 shows that wheat is a very important crop in Mediterranean Europe.

Olive or fig trees, grapevines, and grain are often grown in the same field. The trees are planted in rows, and grapevines are trained up the trunks and onto wires strung from tree to tree high above the ground. Between the rows of vines and trees, strips of wheat are planted.

Barley needs little moisture and will grow in higher latitudes and altitudes than any other grain. It will grow on lands that are too dry for wheat. Turn to the map on page 256 and notice that barley is a very important crop in Spain. It does well in the central and southeastern parts of that country, where the rainfall is only 10 inches in winter and even less in summer.

Usually rye and oats grow in cool climates. Yet, some rye is raised in Mediterranean Europe, and oats are surprisingly important. Turn to the map on page 244 to

These men are gathering dates from date palm trees.

Courtesy Spanish Tourist Department



see where rye is raised. By comparing this map with the physieal-political map, you ean see that it is grown ehiefly on highlands, where the altitude makes the climate cool, and the soil is too thin to grow other crops.

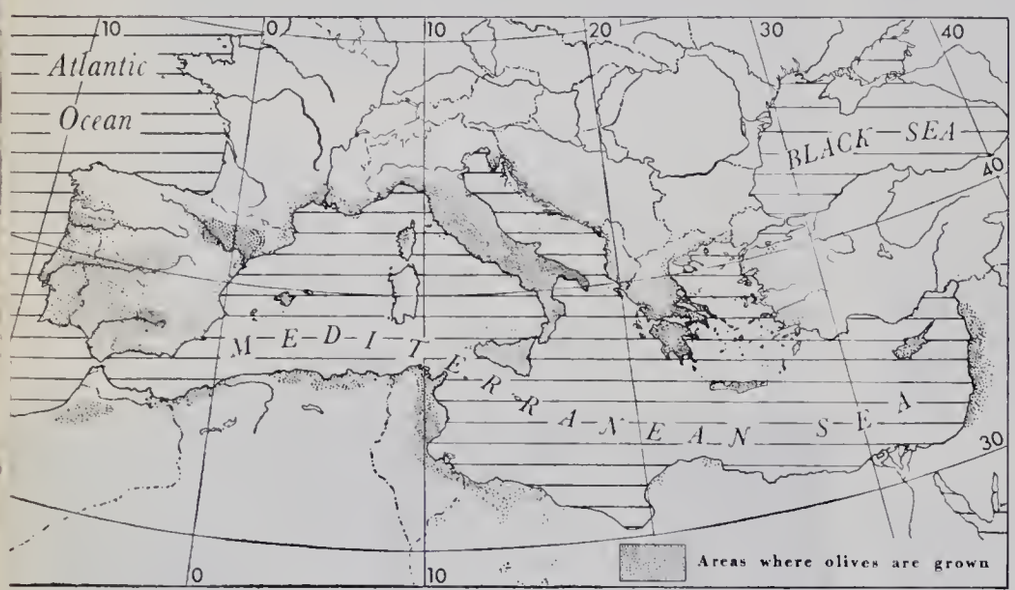
Oats are grown as a winter crop. Mediterranean summers are too hot and dry for them, but winters there are warm enough and moist enough for oats to grow. Look at the map on page 244 and see where oats are raised.

Citrus fruits. Citrus fruits grow ehiefly on sunny slopes or in sheltered plaees in the warmer areas of Mediterranean Europe. Citrus fruits, as you know, include lemons, grapefruits, and limes, as well as oranges.

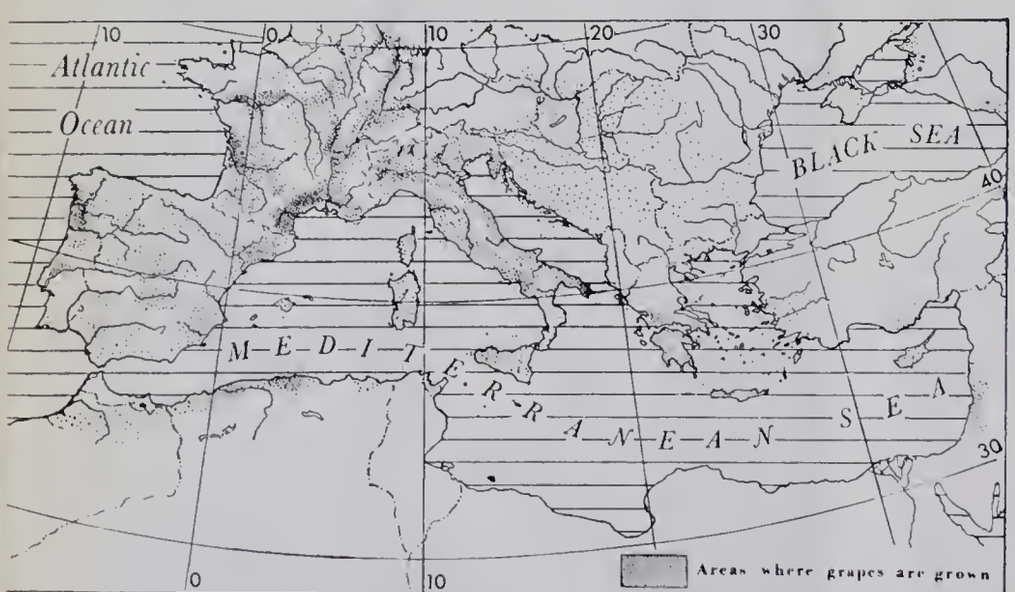
The most productive citrus-fruit area is the coastal land of eastern Spain. There orange orchards face the warm sea, protected from cold winds by the high plateau. The weather is sunny. It is also dry, because it lies on the leeward side of highlands, and irrigation is necessary. The most important orange-growing region in Europe is the irrigated land near the Spanish city of Valeneia.

Irrigation. Many parts of Mediterranean Europe are irrigated. The eastern lowlands of Spain are an example. Streams flowing down from mountains supply water for irrigating gardens and orchards during the long, dry summer, and it has become one of the most productive parts of Spain. Many different vegetables, as well as oranges and lemons, grow on these irrigated lands. During winter and spring months, the markets of northern Europe are supplied with vegetables grown in Mediterranean Europe.

In the places where water is available, irrigation has made it possible for many regions of little rain to support a large population. With irrigation, crops can be cultivated and produced throughout the year in places where the temperature and growing season are favorable.



Map showing where olives are grown in the Mediterranean region.



Map showing where grapes are grown in the Mediterranean region.

The chestnut and the cork oak. Forests of chestnut trees cover many of the mountain slopes of Mediterranean Europe that are high enough to be cool and have enough moisture. In the autumn, great quantities of

chestnuts are gathered and stored for food. They may be roasted, or boiled and used as a substitute for potatoes. Sometimes they are pounded or crushed into a coarse meal, which is used, much as we use oatmeal or other crushed grains, for breakfast food. And sometimes they are ground into flour which is made into bread.

In both Spain and Portugal, cork is a very important forest crop. There, on the rugged uplands of the south, are found cork oak trees. The thick, spongy bark of this tree supplies cork bottle-stoppers. The light, soft cork is used in life preservers, on fishing rods, as lining for hats and shoes, for making linoleum, and in many other ways. The cork can be taken from a tree only once every ten years.



Roger Coster from Rapho-Guillumette

Brilliant sunshine and deep shadow on a hilly street in Lisbon. The house at the left is built farther up on the steep hillside.

The importance of animals. Most of the pastures of Mediterranean Europe have not enough grass to feed many animals. In the northern part, where there is some rainfall in both summer and winter, cattle can be raised, but in other areas the hot summer sun dries up the grass, and the winter snows cover the mountain pastures. These areas can be used only part of the year. Few cattle are raised in Mediterranean Europe, with the result that the people use few dairy products.

Where the pastures are too poor for cows and horses, sheep and goats are raised. Many sheep on the Iberian Peninsula are of the merino breed. Though they do not provide very good meat, their wool is of extremely fine quality. Turn to the map on page 208 and locate the most important sheep-raising areas.

Oxen, horses, and donkeys do not lead an easy life on the farms of Mediterranean Europe. Heavily loaded donkeys plod down country lanes and through city streets. Slow, sturdy oxen pull high-wheeled carts filled with grain. All the animals share in the work of ploughing and cultivating the fields. The farming methods of the farmers of this region are generally backward, and animals there do the work that tractors do in more industrialized and more prosperous countries.

USING THE MINERALS

Mediterranean Europe has small deposits of several minerals, but only a small part

of the population makes a living working in the mines.

The mines of Spain. Spain is noted for its variety of minerals. There, deposits of iron ore, copper, mercury, lead, zinc, and silver have been found.

Most of the iron ore is in the north, near the Bay of Biscay. You can find this region on the map on page 202. Much of the iron ore is exported through the seaport of Bilbao, which handles most of the sea trade between Spain and western Europe.

Spain does not have a large iron and steel industry. It has deposits of coal and iron ore, but much of the iron ore is exported, and very little coal is mined. Indeed, much of the coal used in Spain is imported from Great Britain. Manufacturing is not well developed in Spain, and the country has very few industrial centres.

The mercury deposits of the Sierra Morena in southern Spain are the largest and richest in the world. Part of the mercury the Spaniards mine is sold to Canada. You have seen it in thermometers. It is also used in medicines. Copper and lead are also mined in the Sierra Morena.

Scarcity of minerals in Italy and Greece. Outside of Spain, very few valuable minerals have been discovered in Mediterranean Europe. Most of Italy's deposits of minerals are found on the islands of Sardinia and Sicily. In Sicily there are some outstanding deposits of *sulphur,* Italy's most important mineral. For a long time, Italy led the world in the production of sulphur, but the states of Texas and Louisiana, in the United States, now supply the largest percentage of this mineral. Italy also has mercury mines in the mountains near the northern boundary. Only small quantities of other minerals have been mined.

Both Italy and Greece have fine marble. The *quarries* of both countries have been operated for centuries, and even today the most famous marble for making statues comes from Carrara, in the northern part of the Apennines. The buildings of ancient Greece and Rome, still world-famous for their beauty, were built of local marble.

MEDITERRANEAN LANDS AND PEOPLES

Though Mediterranean Europe is mainly an agricultural region, the farmers cannot raise enough grain and other foods to supply the needs of the people. Subtropical products such as olives, grapes, and citrus fruits are exported, and other kinds of foods are imported.

Some manufacturing is done in most of the cities, but there are only a few industrial centres. Mediterranean Europe does not have many raw materials, either to export or to use in its own factories.

THE IBERIAN PENINSULA

You will remember that the Iberian Peninsula is shared by two countries — Spain and Portugal. The most fertile parts of Portugal are its coastal lands along the Atlantic, while the most productive lands in Spain border the Mediterranean Sea. Between these two fertile strips lies a wide, high, dry plateau with a rather sparse population.

You can see on the physical-political map that three large rivers flow from this plateau through Portugal to the Atlantic. They have cut deep and narrow gorges in the plateau. These gorges are not easily crossed, and the rivers are so far below the surface of the plateau that they cannot be used for irrigation or for transportation. Harbors are located on the rivers near the sea. What port is on the Tejo River? It is also called the

Tagus River. Find the Guadalquivir River of Spain. This river is navigable as far as the city of Seville (Sevilla) and is therefore important for trade.

Living on a dry plateau. Much of the plateau is dry, dusty, and barren. In most parts only grass grows and in summer the heat scorches the grass. In winter, icy winds blow across these highlands, and it is so cold that it is possible to skate on the frozen lakes and rivers. Some railways have been built on the plateau, but the region is large, and many more roads and railways are needed. Ox teams and mule trains are the means of transportation most often used.

The chief industry of the plateau is sheep raising. There are thousands and thousands of sheep there. All summer long they roam over the land tended by shepherds wearing breeches of leather and jackets of sheepskin. In the north and northwest, where it is not quite so dry, wheat is raised.

The only large city on this high plateau is Madrid. A king in the Middle Ages made it the capital of Spain because it lay in the centre of the country. The location of the city in the heart of the plateau makes it a natural centre for the rail and air transportation of Spain, but it has few other natural advantages. The weather there is like that of the rest of the plateau, and all Madrid's food has to be shipped from the coast, because neither vegetables nor cattle can be raised in the dry region near Madrid. There are some factories in the city; leather articles are among the most important products.

Spain's coastal lowlands. Along the northern coast of Spain is a strip of fertile, unirrigated land, and a band of irrigated land stretches along the Mediterranean coast from Barcelona to Portugal, and up the Ebro and Guadalquivir rivers. The various product maps and the text on page 264 will tell you what the farm products of these regions are.



A map of the Iberian Peninsula.

Barcelona is Spain's largest seaport and chief industrial city. Its most important industry is textiles. Cotton, wool, silk, and linen are manufactured there. There are coal deposits nearby, and streams flowing from the Pyrenees supply water power. Sheep that graze on the plateau supply an abundance of wool, but cotton is imported, chiefly from the United States. Barcelona's main imports are food, fuels, raw materials, and manufactured goods. Fruits, textiles, olives, olive oil, and leather goods are among the exports.

Portugal. Portugal is crossed by cool, moisture-laden winds from the Atlantic. They blow far inland, and bring sufficient rain to almost all the farming areas. More than half the people farm and raise stock for a living, but though agriculture is the chief industry, many foodstuffs are imported. Methods of transportation are so poor that sometimes it is cheaper to import wheat from South America than it is to transport home-grown wheat from one part of Portugal to another.

Terrace after terrace of grapevines line the valley of the Douro River, for Portugal is one of the largest wine-producing regions of Europe. There are groves of olive trees in nearly all parts of Portugal, and many

forests of cork oaks; Portugal supplies about half of the world's cork. Fishing is also an important industry and fishermen return from the sea with large catches of fish to be canned.

The capital and principal port of Portugal is Lisbon (Lisboa). Fishing boats lie along the wharves, and textile mills employ many people. The city is quite modern, but ox-carts still wind their way through the busy streets, and donkeys move out of the path of automobiles and streetcars. Because it is at the edge of Europe, many planes stop there. Lisbon's chief exports are wine, fish, and cork.

LOWLANDS OF SOUTHERN FRANCE

The valley of the Rhône River and the lowlands along the coast of southern France are a part of Mediterranean Europe.

The Rhône Valley. Southward from Lyon, the steep sides of the Rhône Valley are covered with vineyards and mulberry trees. Where it widens to the south, fields of wheat and other Mediterranean crops cover the land in the valley and along the coast.

Because of the supply of mulberry leaves, on which the silkworms feed, a large silk industry grew up around the city of Lyon. The Rhône Valley no longer provides all the raw silk that is needed, and much is now imported from Japan. The weaving of artificial silk has also become important in the textile cities of the Rhône Valley.

The port of southern France. Marseille is the chief trading port of southern France. Although Marseille is not situated on the Rhône, because the land at the mouth of the river is too swampy, it is connected with the river by a canal.

A goat-herder tends his flock on the plateau of Spain.

Courtesy Spanish Tourist Office



Because of its swift current, the Rhône is not a good river for transportation, but it is used to some extent, and canals connect it with the large rivers of industrial western Europe. However, the valley of the Rhône does offer an easy land route to northern France, and Marseille is connected with all of northern and central France by roads and railways that pass through the Rhône Valley.

Although Marseille has imports and exports of many kinds, it is best known for its large shipments of various kinds of oil; peanut oil, flaxseed oil, palm-nut oil, and coconut oil. Much of the trade with the French colonies is carried on through this port.

LIVING IN ITALY

Italy is made up of two very different regions, the Po Valley and the peninsula. The Po Valley is one of the most densely populated regions in Europe, and almost half the people of Italy live there. It is connected by railways with the countries of the rest of Europe.

The larger part of Italy is the peninsula that extends south from the Po Valley. This is the less productive region. It is made up almost entirely of mountains, and the soil in most places is poor. A few areas have better soil, however, and on these the people live.

The Po Valley. Use the map on page 242 to trace the Po River from its source near the boundary of France, across the lowlands of Italy, to its mouth. At one time most of this valley was a great gulf opening into the Adriatic Sea. Gradually, earth carried down from the mountains by streams filled the gulf, and it became solid land. This process continues, and each year the Po River adds about 200 feet of new land to its delta.

Many of the rivers that rise in the Alps flow through long, deep, narrow lakes, on their way to the Po. The lakes act as reservoirs, giving the streams an even flow. These streams are ideal for the development of hydro-electric power and for irrigation. Since Italy has no coal deposits, its rivers are all the more important.



Photo from European

This French worker is emptying the grapes he has just picked into a wagon. The grapes will be made into wine.

The lakes and river valleys are useful in other ways. They provide easy routes to and through the Alps and the Apennines. Along these routes are many resort towns, for this is one of the most beautiful parts of Italy.

The Po Valley produces a great deal of food. The climate is not really of the Mediterranean type, for there is plenty of rain throughout the year. Wheat, corn, and rice are grown. Modern machinery is used there more than in most parts of Mediterranean Europe, though even there farmers are far behind those in industrialized Europe.



Courtesy Italian Consulate

A modern factory in Italy that makes drugs.

The Po Valley is the only part of Mediterranean Europe in which dairying is highly developed. The more plentiful rainfall makes it possible to put the cattle out to pasture during much of the year. Much of the milk is used for making cheese. In other parts of Italy, cattle are used chiefly as work animals.

The high Alps protect the Po Valley from cold north winds, and mountain streams supply plenty of water for irrigation. These conditions make it possible for rice and such fruits as oranges to be grown in a region that is as far north as southern Ontario and Nova Scotia. There, as in Lyon, mulberry trees are raised to provide food for silkworms.

Industries of the Po Valley. Many factories, as well as rich farms, are to be found in the Po Valley. The region is well supplied with hydro-electric power, and has some raw materials. The hydro-electric power is used for driving the machinery of cotton, woollen, and silk mills. Italy supplies large quantities of silk for its mills, and some wool comes from central and northern Italy, but most of it is bought from other countries. Cotton for the mills is imported from the United States.

Two busy manufacturing cities in the Po Valley are Milan (Milano) and Turin (Torino). Milan has rail connections with Germany, Switzerland, and France. These railways cross the Alps. Now find Turin on the map. It is at the head of navigation on the Po River. Like Milan, Turin is served by railways that run through mountain passes to neighboring countries. Many different products are manufactured in these two cities. There are numerous textile mills, and iron and steel are imported for automobile and machinery factories.

Sea gateways to the Po Valley. North of the mouth of the Po River lies Venice, a city built on a cluster of low islands. There, much more than in even Amsterdam and Stockholm, winding canals take the place of streets. There are some paved squares and short narrow streets, but canals lead everywhere. If you wished to go anywhere, you would hire a gondola or a motor boat.

There is no land about the city where crops can be grown or cattle raised. The people eat fish from the sea, and vegetables and fruits, which come in small boats from the mainland of Italy.

Venice is famous for the beautiful glassware made by her skilled craftsmen. Many different glass articles are made, from beads to mirrors. Laces, jewellery, and many other such things are made by the skilled hands of Venetian workmen.

Venice has declined greatly in importance since the days in which it was the commercial centre of Europe and its merchants went everywhere. The Doges Palace and many other Renaissance buildings stand as reminders of the days of past glory, and serve now to attract tourists.

Genoa (Genova), the main exporting city of northern Italy, lies outside the Po Valley. However, two railway lines cross the Apennines and link Genoa with the manufacturing centres of Milan and Turin, and the St. Gotthard Tunnel connects these cities with the trading countries of western and central Europe.

The terraced slopes of the hills behind Genoa are covered with gardens and groves of fruit trees. Ships from all over the world crowd its harbor, and modern docks and warehouses line its water front. Genoa is an industrial city as well as a seaport, and it has shipyards and foundries.

At one time Venice and Genoa fought each other bitterly for the Mediterranean trade. When the Atlantic trade route developed, Genoa was in a more favorable position. It also has a better harbor.

The peninsula of Italy. From the Po Valley, the peninsula of Italy extends southward for nearly 600 miles. Almost all of this part of Italy is rough and mountainous. Look for lowlands on the map. You can see two wide valleys and a few strips of coastal plain, broken by mountains that often end in high, steep cliffs at the water's edge. Quaint old villages on the mountain sides

An Italian farm.

Courtesy Italian Consulate



and terraced hillsides and orchards add to the beauty of the peninsula, but this is a poor part of the country.

Water is searce, and in most plaees there is none for the development of either water power or irrigation. The backward methods of farming and the erops that the farmers are able to raise resemble those of Spain and Greece.

Florence (Firenze), Rome (Roma), and Naples (Napoli) are the largest cities of the peninsula. All are on fertile lowlands. Florence is in the valley of the Arno River. There agrieulture is intensive. Florence is the trading centre for the valley and for the neighboring highlands. It is near the route that crosses the Apennines to the eastern part of the Po Valley. Bologna is at the other end of the route through the mountains; railways meet at that eity as they do at Florence.

Rome is south of Florence, in the valley of the Tiber River. Because of its central position many routes lead to it. It beeame the capital and largest city of Italy partly because it had good routes and a central position west of the Apennines. At one time it was the capital of an empire that extended from India to Scotland. It included large parts of three continents.

Rome is not a manufacturing city. Most of the people there make a living by working for the government or by entertaining tourists. The ruins of ancient buildings built in the days of the Roman Empire are a great tourist attraetion.

A part of Rome called the Vatican City is not part of Italy but an independent state. It is the home of the Pope, the head of the Roman Catholic Chureh.

Naples has the only good harbor south of Genoa, and it handles most of the overseas trade of southern Italy. Passenger as well as freight ships dock there, for many tourists visit the Mediterranean countries, especially in winter. Nearby are the still-smoking volcano of Vesuvius and the aneient city of Pompeii, which was buried by volcanic ash over 2000 years ago and has recently been excavated.

Naples is the trading centre for the farm lands of the countryside, and it has a variety of small factories making such things as gloves, jewellery, and textiles.

These pillars were carved of marble in the days of the ancient Greeks.

Courtesy Royal Greek Embassy Information Service



LIVING IN GREECE

Greeee has about half as many people as Canada, even though the land is so mountainous that one-third of it eannot be used. It is roeky and sandy, and in many places not even grass will grow. This eountry, only slightly larger than our Atlantic Provinces, is very erowded.

Ways of making a living. You can see on the physieal-political map that the small



Fritz Henle

Vineyards and orchards surround this city in the highlands near Florence. Parts of an old wall and the many towers show that it is a very old city and was fortified against enemies.

plains of Greece are separated from each other by rough mountains. Cereals, grapes, and olives have been grown on these plains for at least 2000 years, and more than half the people make a living through farming. Even so, not enough food is grown to supply the needs of the people, and some must be imported. The farms are small, the yield per acre is low, and the methods of farming are primitive and destructive of the soil.

Most of the rough, mountainous land is used for grazing. The grass in many places is too short and dry and tasteless to satisfy any animals except goats and sheep, and these animals supply the Greeks with most of their meat and cheese, and with wool.

Only a very small number of Greeks are employed in manufacturing industries. There is little coal, there is scarcely any water power, and there are few raw materials. Practically all the industries depend upon agricultural raw materials. Among the factory products are olive oil, wine, textiles, and leather goods. Most of these things are used in Greece, but some are exported. Tobacco, too, is exported, while both food and manufactured goods are imported.

The Greeks, like the Norwegians, are good sailors and fishermen. In both countries the coastline is irregular, and most of the people live near the sea. Long ago, the Greeks were the greatest sailors and traders in the world, and even up until quite recently they had a large merchant marine.

Cities and trade routes. Find Athens (Athenai) on the physical-political map. It is the capital of Greece. It was the capital of the ancient city-state of Athens, from which came some of the greatest men in the world's history, and where the first democracy flourished. Many of the buildings are made of marble from nearby quarries, and the city gleams white against the clear blue sky.

Turn to the map and find the Greek port of Salonika (Thessalonike). Notice that it is

on the Aegean Sea, near the mouth of the Vardar River. This location makes Salonika more than a port for Greece, because a great deal of the Mediterranean trade of central Europe is handled through it.

ADRIATIC SHORE LANDS

The coast of Yugoslavia is called Dalmatia. Though the coastline is broken, few ports have developed because the coast is cut off from the interior of the country by rugged mountains. Because it is so difficult to reach the interior, much of Yugoslavia's trade goes through the port of Fiume (Rijeka), and some goes through Trieste.

Albania has a very small foreign trade. The land is rough and transportation poor. Many rivers have no bridges; they are forded. Only pack horses and ox carts can travel on the narrow mountain trails.

Very little industry is carried on in these Adriatic shore lands. There are many kinds of fish in the waters around Dalmatia, and some of the people are fishermen. Others are farmers, but there is very little land for farming, because the mountains come so close to the sea. In Albania, only about one-tenth of the land can be used for raising crops. In the coastlands of Yugoslavia and in Albania, many sheep and goats graze on the rough hillside pastures.

THE GEOGRAPHY WORKSHOP

I. OUR DEBT TO THE ANCIENT MEDITERRANEAN WORLD

No matter where you live, your community owes a great debt to ancient Mediterranean Europe. Mediterranean countries have greatly influenced our art, architecture, music, literature, language, religion, and government, and even our thinking. Perhaps you could find out ways in which our civilization has been influenced by the ancient Mediterranean civilization. Ask your teacher to tell you in what books to look to find this information.

Fishing vessels in a lagoon in Venice.

Courtesy Italian Consulate



II. A MEDITERRANEAN CLIMATE

One region in North America can be compared closely with Mediterranean Europe — the region around Los Angeles in California. There, as in Mediterranean Europe, is found a coastal region with cold winds cut off by mountains. Los Angeles has a light rainfall, which falls almost entirely in winter. As a result, the grassy slopes are green in winter and brown in summer. Winters are mild and rainy enough for grains to grow, and the weather is warm enough throughout the year for subtropical crops to grow under irrigation.

List the crops grown in Mediterranean Europe. Put a check mark beside each crop of Mediterranean Europe that is also grown in southern California.

III. PEOPLES AND PRODUCTS

Spain once owned a vast area that included all of South America except Brazil and that extended into North America as far as Florida and California.

You have probably noticed that in Canada there are far more people of Italian and of Greek ancestry than of Spanish. Yet in many ways the geography of Canada is more like Spain's than like that of either Italy or Greece. In the old days Spaniards preferred to move to the Spanish colonies. Even when Spain lost the colonies, Spaniards found there the language and customs that they had known at home. So most Canadians from Mediterranean Europe are not from Spain, but from France, Italy, or Greece.

In almost every community you can find people to tell you more about Mediterranean Europe. Look for people and products from Mediterranean Europe, as you have for people and products from other regions.

IV. WHAT YOU CAN READ FROM PICTURES

Write a paragraph describing what you see in the picture on this page. Explain how you know that the city is a seaport and that it is built on a hillside. Describe the buildings, telling of what materials they are made, and what kind of roofs they have. Why is more timber not used in the buildings?

V. A CARGO FROM MEDITERRANEAN EUROPE

A Greek ship is about to sail for the British Isles. It will stop at various Mediterranean ports to pick up cargo. When it docks in Liverpool, it will be carrying ten of the products named below. Which of the following do you think are most likely to be in its cargo: almonds, butter, coal, cork, cotton bales, cotton cloth, currants, leather goods, lemons, marble, meat, mercury, olive oil, palm oil, silk, tobacco, wheat, wine?

VI. IMAGINARY PICTURES TO SORT

Which of the pictures described in the next column could not have been taken in Mediterranean Europe?

1. A wide plain, with fields in which sugar beets, potatoes, and oats are all growing at the same time.
2. A valley in which there are orange groves and almond orchards. Fig trees grow on the hillsides.
3. The interior of a large dairy barn with a long row of cows waiting to be fed. Through the window you see great stacks of hay. The haystacks, fences, and barnyard are all covered with snow.
4. A vineyard on a terraced hillside. Olive trees grow on the slopes above the terraces. There is a small village of stone houses on the hilltop.
5. Goats and sheep grazing on a steep, rocky hillside. The grass is short and grows in scattered clumps. The only trees are a few small pines with bushy tops.

Fritz Henle




60° 50° 40° 30° 20° 10° 0° 10° 20° 30° 40° 50° 60° 70° 80°
50°
40°
30°
20°
10°
Atlantic Ocean
EUROPE
London
Berlin
Moscow
Paris
Rome
Madrid
Lisbon
Algiers
Tunis
Tripoli
Bengasi
Athens
Istanbul
Black Sea
Caspian Sea
URAL MOUNTAINS
ALPS
Mediterranean Sea
Strait of Gibraltar
Tangier
Casablanca
MOROCCO
ATLAS MOUNTAINS
TUNISIA
ALGERIA (Fr.)
LIBYA
EGYPT
Cairo
Alexandria
Port Said
Suez Canal
Suez
Baghdad
ASIA
AZORES ISLANDS
MADEIRA ISLANDS
CANARY ISLANDS
SPANISH WEST AFRICA
Tropic of Cancer
SAHARA
FRENCH WEST AFRICA
Tombouctou
Senegal River
CAPE VERDE ISLANDS
Dakar
GAMBIA (Br.)
PORTUGUESE GUINEA
Freetown (Br.)
SIERRA LEONE
GOLD COAST (Br.)
Niger River
Lake Chad
Kano
Fort Lamy
NIGERIA (Br.)
Lagos
EQUATORIAL AFRICA
SUDAN
Khartoum
Sennar Dam
Blue Nile
White Nile
Aswân
Nile River
Red Sea
Mecca
Port Sudan
Asmara
Persian Gulf
Gulf of Aden
FRENCH SOMALILAND
BRITISH SOMALILAND
Addis Ababa
ETHIOPIA


AFRICA
Scale of Miles
0 100 200 400 600 800
National Capitals
Other Capitals
Other Cities
Shading from green through yellow, brown, and red indicates increase in altitude. Figures show approximate altitude in feet for corresponding color.
10,000 ft.
5,000 ft.
2,000 ft.
1,000 ft.
500 ft.
Gulf of Guinea
SPANISH GUINEA
Yaoundé
(Fr.)
FRENCH EQUATORIAL AFRICA
Congo River
BELGIAN CONGO
Congo R.
Brazzaville
Leopoldville
Luanda
ANGOLA
(Port.)
Elisabethville
UGANDA
KENYA
(Br.)
Nairobi
Lake Victoria
Mount Kilimanjaro
TANGANYIKA
(Br.)
Dar es Salaam
ZANZIBAR
SOMALI
NYASALAND
NORTHERN RHODESIA
(Br.)
Zambezi River
Salisbury
SOUTHERN RHODESIA
MOZAMBIQUE
(Port.)
Mozambique Channel
MADAGASCAR
Tananarive
SOUTH-WEST AFRICA
(U. of S. Af.)
Windhoek
BECHUANALAND
(Br.)
Pretoria
Lourenço Marques
Johannesburg
SWAZILAND
UNION OF SOUTH AFRICA
Orange R.
Kimberley
Durban
Bloemfontein
BASUTOLAND
Capetown
Cape of Good Hope
Port Elizabeth
ASCENSION ISLAND
ST. HELENA ISLAND
Atlantic Ocean
Indian Ocean
Equator
Tropic of Capricorn
South Latitude
0°
10°
20°
30°
40°
40° 30° 20° 10° West Longitude 0° East Longitude 10° 20° 30° 40° 50° 60° 70°



AFRICA

Africa has always been a mysterious and romantic land. Egypt was the home of one of the oldest civilizations in the world, but the Egyptians knew little of their own continent. Later, Phoenicians, Greeks, and Romans colonized the Mediterranean coast of Africa. All of Africa north of the Sahara Desert became part of the Mediterranean world. No one thought of the coastlands as being very different from Europe, but the great desert to the south was strange and forbidding. About the land beyond the Sahara, the ancient people heard only fantastic stories.

It was not until the great age of exploration, many centuries later, that more became known of Africa. Among the earliest explorers were the captains trained and sent out by the Portuguese prince called Henry the Navigator. Year after year, Prince Henry sent his captains to sail southward along the African coast. Year by year they went farther, building ports and trading posts for those who followed.

Four years before Columbus landed in America, a Portuguese captain reached the southern tip of Africa. A few years later another captain sailed around South Africa and northward along the east coast, then crossed the Indian Ocean to India.

Thus the coasts of Africa became known to Europeans. On maps, the continent was

shown correct in size and shape. Harbors, trading posts, and river mouths were named, but inland the maps were blank or were filled with pictures of elephants, lions, and ostriches. Until recent years, Africa was called the Dark Continent, not because of its dark people and dark forests, but because so little was known about it.

The maps are filled in now. With their help you can explore Africa for yourself and learn some of the reasons why the exploration of Africa progressed so slowly.

WHAT WE CAN LEARN FROM MAPS

THE LOCATION OF AFRICA

When you begin the study of a new continent, you naturally wish to know where it is. Africa is across the Mediterranean Sea from the Mediterranean lands of Europe. Turn to the map on pages 276-277 and find the part of Europe that is closest to Africa. How far apart are the continents at the nearest place? Is any part of Africa farther north than parts of Europe?

Use a globe to answer the following questions: What is the great-circle distance from Montreal to Dakar in Africa? Montreal to Cairo? Montreal to Capetown? Flying from Montreal to Cairo by a great-circle route, what countries would you cross?

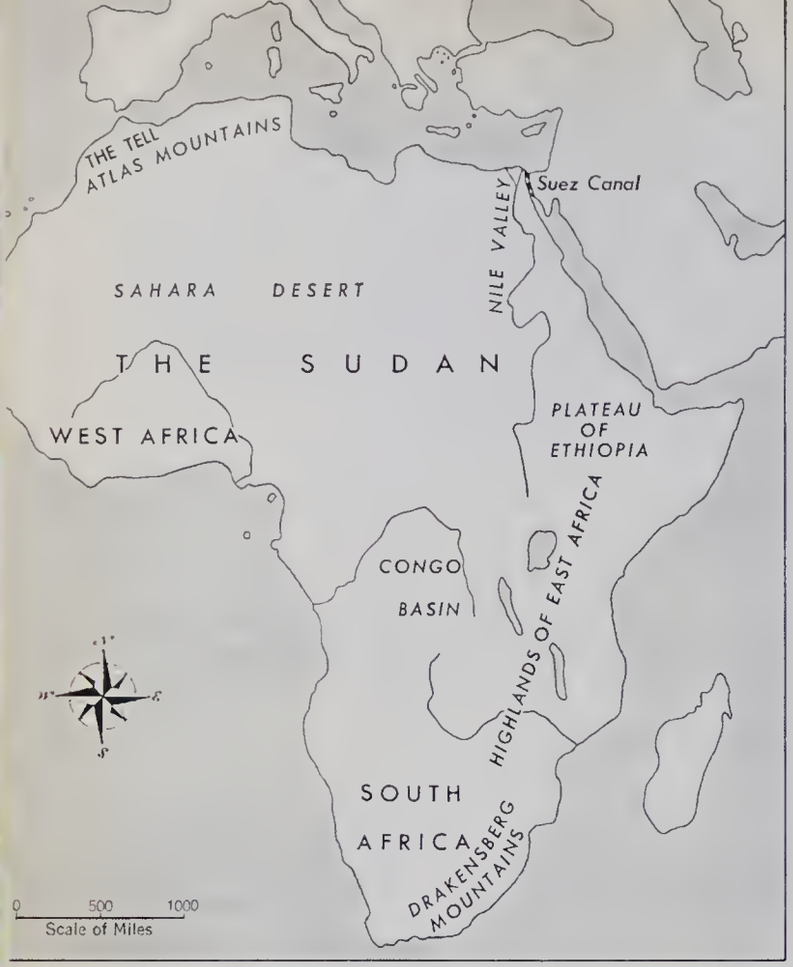
THE SIZE OF AFRICA

About how wide is Africa at the point where it is widest? Use the map on pages 276-277 for measuring. About how long is it at its greatest length? Through how many degrees of latitude does it extend? How many of these degrees are north of the equator and how many south? What North American city is in about the same latitude as the northernmost point of Africa? What city is in about the same latitude as the

These ugly, thick-skinned animals are hippopotamuses. They live in Africa, near rivers. These hippopotamuses live in the Kruger National Park.

Courtesy Govt. Information Office, Union of South Africa





Geographic regions of Africa.

southernmost point of Africa? How many countries and colonies are there in Africa? What are their names?

Using the tables at the back of the book, find the size of each continent. Draw a line to represent each one, letting a quarter of an inch stand for 1,000,000 square miles. How much larger than North America is Africa? How does Africa compare with Asia?

THE SURFACE OF AFRICA

Turn to the map on pages 2-3. At a quick glance, what impresses you about the height of the land in Africa? Do you see any other continent with as much of its area shown in brown and yellow? Africa has no really large lowlands. Most of the continent is more than 1000 feet above sea level. Nearly the whole southern part of the continent is more than 2000 feet above sea level.

Most of the land above 2000 feet in altitude is a high plateau, with the exception of some high, rugged mountains to be found in eastern Africa. The part between 1000 and 2000 feet is mainly plateau, too, even though it is not as high. In many places the edge of the plateau is so steep that people cannot climb it easily. Rivers tumble off the edge in swift rapids and beautiful waterfalls.

Now you have found one reason why Africa remained unexplored for so long. The early explorers of Canada and other new lands travelled on the rivers. Africa has only a few great rivers, and even on these it is impossible to travel by boat from the coast to the interior of the continent.

On your map of Africa, pages 276-277, the coastline looks smooth and regular. You can see that it does not have many deep bays and islands close to shore. In other words, it does not have many good harbors. Even the river mouths do not make good harbors, for most of them have *sand bars* at the entrance.

On the physical-political map, pages 276-277, you will find the Atlas Mountains near the northwestern coast of the continent. Far away, near the southeastern coast, you will find the Drakensberg. These are the only long mountain ranges on this continent. In the highlands of eastern *equatorial* Africa there are high mountains, but they stand either in short ranges or alone. Most of the highlands are merely the higher parts of the plateau.

RAINFALL AND VEGETATION OF AFRICA

On a blank map of Africa, outline in color the parts of Africa that have more than 40 inches of rain in a year. The world rainfall map, you will remember, is on pages 8-9. In the same color, draw a broken or dotted line around the regions that have less than 10 inches of rain. Between what latitudes, north and south, do you find most of the area that has more than 40 inches of rain? Between what latitudes, north and south, do you find large areas with less than

10 inches of rain? Compare rainfall in the same latitudes on other continents. Now look at the vegetation map on pages 12-13. What kind of vegetation do you find along the equator on the western side of the continent? What kind do you find along the equator on the eastern side of the continent? What kind do you find in most of the region that has less than 10 inches of rain?

The rainfall and vegetation maps furnish you with another clue to the reasons why Africa remained so long unexplored. North Africa and much of East Africa are deserts. Western South Africa is a desert. It is very hard to travel across these deserts.

REGIONS OF AFRICA

On your outline map, draw a line around the forested regions. Draw another line around the regions of desert vegetation. Now be very careful as you work. You are going to finish your map in a way that will make it extremely helpful to you.

First, find the forested regions that have more than 40 inches of rain. You already have the 40-inch rainfall line on your map and a line around forested regions. Color lightly the regions enclosed by both of these lines. Green is a good color to use.

Second, color lightly the regions that have desert vegetation and less than 20 inches of rain in a year. Pink is a good color to use for these regions.

The large regions still white on your map are mainly grasslands, but the grasslands are not all alike. In eastern Africa, notice the lines that show land more than 2000 feet in altitude. Turn to the growing-season map. Across eastern Africa add to your map the lines that enclose a region that has no frost at any time. You can find a region that is more than 2000 feet high, is a grassland, has less than 40 inches of rain in a year, and has no frost at any time. When you find this region, color it yellow.

Now you have a map that shows you the great regional differences of Africa. You will need it as you study. It should show two regions along the equator. To the west is a tropical rain forest and to the east is a high, dry grassland. At the northern and southern ends of the continent there are deserts. Parts of your map are still uncolored. You will learn about these regions too. The map on the opposite page tells you what the large regions of Africa are usually called.

WHERE PEOPLE LIVE IN AFRICA

When you look at the population map, pages 14-15, you see at once that Africa is not densely populated. What is the population density in most of Africa?

The areas of denser population are shown as scattered spots on the population map. Most of these spots are rather small. How many areas of denser population are there? How many are on the coast? How many are along the rivers?

You can see that most areas of denser population are on the coast or on rivers, but you cannot explain from your maps why they are located just where they are. The explanation will have to wait until you have studied the regions of Africa in more detail.

Scrawny cattle on land that is overgrazed. Because too many cattle eat the grass, none of them get enough. This picture was taken in Nigeria.

Courtesy United Kingdom Information Services



LIVING IN NORTH AFRICA

At the Strait of Gibraltar, Africa and Europe almost touch. If you were to go through the strait in a ship, you could see both coasts plainly.

Some writers have said that southern Spain is like a piece of Africa in Europe. Other writers have said that Europe really extends to the Atlas Mountains. The truth is, both are parts of the same Mediterranean region.

THE MEDITERRANEAN REGION

In Africa, the region of true Mediterranean climate is not large. It covers only the area from the crest of the Atlas Mountains to the sea. In winter, mild moist winds blow from the Atlantic Ocean. They drop their moisture on the coast and on the northward-facing slopes of the Atlas Mountains. The weather is chilly, but not really cold, except on the mountains, where snow often falls. In summer, skies are clear and the weather is hot and dry. From April to the end of September there is no rain except on the mountains.

Products of the Tell. As you can see on the physical-political map, there is little lowland between the sea and the Atlas Mountains. The physical-political map suggests that the land does not slope smoothly from the coast to the high mountains. First there is a strip of land along the coast called the Tell. This is not a coastal plain, for it is broken by ranges of hills and low mountains. Farther back from the coast is a plateau, and beyond this rise the peaks of the Atlas Mountains.

Even though the winters are often frosty, farming goes on the year round. As in the Mediterranean lands of Europe, grain is

These people are drawing water at a well in Tunisia. Notice how dry the country looks.

Courtesy French Government Tourist Office



grown during the winter and is harvested in the spring. Wheat and barley are the grains most commonly raised. From early spring to late fall, vegetables and fruits are harvested. On irrigated land, the Tell farmers grow almonds, figs, olives, lemons, oranges, apricots, peaches, and grapes. Many of these products are shipped to markets in Europe.

The higher lands. Just back of the Tell lies a rather high, dry, and barren plateau. There most of the people are herdsmen. They raise large numbers of sheep, goats, and camels.

Esparto, a kind of grass, is grown on the plateau and also on the Tell. The people of northwestern Africa use it for making ropes, sandals, and matting. Large quantities of esparto are exported to Europe, where it is made into paper.

Southwest of the plateau rise the high and snowy peaks of the Atlas Mountains. The lower slopes are covered with forests of both cone-bearing and broadleaf trees. Among the broadleaf trees are cork oaks. Cork, bark to be used for tanning leather, and timber are obtained from these forests and are among the important exports of the region.

People of Mediterranean Africa. On page 284 is a picture of a little city near the Strait of Gibraltar. In the distance you see a low range of mountains, with farms on the slopes. In Mediterranean Europe you might see similar low, bare-looking mountains with cultivated slopes, but you would not see a town like the one in the picture. The style of these buildings is characteristic of North Africa, as is the style of the clothing that the man is wearing. In ancient days, the people of North Africa were Berbers, people who are much like the Egyptians. Later, Arabs came to the region from the east, and now the people and their ways of living are a combination of Berber and Arab.

LIVING IN DESERT AND OASIS

You have learned that the true Mediterranean region of Africa is the strip between the high Atlas Mountains and the sea. Eastward from this region, the coastlands become drier and drier. Around Tripoli, Mediterranean crops are still grown, but farther east the land becomes too dry for crops. Both the rainfall and vegetation maps indicate that there the desert reaches all the way to the sea.

The great desert. Beginning along the Atlantic coast of Africa and stretching far into Asia, is a desert region so large as to be almost beyond imagination. The desert area in North Africa is nearly as big as all Canada.

Most people think of the desert as being made up of mile upon mile of sand. Actually, only a small part of the desert is sand. Some is bare rock, some is covered with small stones that look as if they had been polished. It is not sand, but lack of rain that makes a desert.

Desert herdsmen. When you see pictures of Arabs on camels, you may be sure they do not live in a completely barren desert. Such land does not afford people any way of making a living. Fortunately, only a small part of the desert is made up of entirely bare stones, sand, or rock. Most of the Sahara has enough plants to support a few animals.

Most of the Sahara has a little rain. Over a great part of the area the rain comes in sudden hard showers, and these are very irregular. After a rain a number of plants appear for a while, after having lain in the ground for a long period, unable to grow because of lack of water.

Most desert herdsmen live in tents and drive herds of sheep and goats from place to place. They keep camels, too, and some of them have a few cattle, donkeys, mules, or horses. When the herdsmen of a *nomad* tribe learn that rain has fallen in a certain



Fritz Henle

Which parts of this picture remind you of other Mediterranean lands? Which are typical of Africa?

place, they go there with their animals. By the time the plants in that place have been eaten, rain will have fallen somewhere else.

People of the oases. Most of the people of the desert region are not herdsmen but *oasis* farmers. Herdsmen would have a hard time living in the desert if it were not for the farmers who trade them grain and fruit for wool, meat, and the skins of animals.

Oasis farming depends upon irrigation. In some oases, water flows out of the ground as a spring. More often it is drawn from wells, as in the picture on page 282. Sahara oases are usually found in groups; some follow the course of a dry river bed, where there is water under the ground, while others depend upon a group of springs for their water.

The oasis farmer uses his land intensively. He may have only a few acres of the precious irrigated land, but he makes it do the work of two or three times as much land. First, he grows date palms. Dates are perhaps the most natural crop for a desert oasis. The palms need plenty of water around their roots, but the fruit is spoiled if rain falls while it is ripening. Dates are a real part of the food supply in the desert. When other food is scarce, they may even be given to animals.

Besides his date palms, the oasis farmer grows citrus fruits, figs, pomegranates, olives, and guavas, as well as the common fruits of cooler lands. Almonds and pistachio nuts are also grown.

Vegetables are grown under the trees in the orchards and on other plots of ground. Wheat, barley, oats, and flax, too, are grown in winter. Corn and *millet* are usually raised in summer.

Trading with desert people. In the larger oases the people are often engaged in manufacturing and trade, as well as in farming. Dates are dried and packed for shipment. Goatskins are made into leather. Pottery is manufactured, and blankets and carpets are woven. The oases people have all these things to sell.

The nomads are the traders of the desert. They come to the oases to buy food and manufactured articles for themselves, and they also carry goods to other places for the oasis people. Trails cross the desert from oasis to oasis. Along these trails *caravans* of camels carry dried dates and a few other products toward the towns at the edge of the desert. Many products are sent to the ports for export.

THE OASIS OF THE NILE

One oasis is so large and so different from the rest that it requires special study. This oasis is the long, narrow strip of irrigated land along the Nile. The land beyond the irrigated strip is desert. On the population map, pages 14-15, you can follow this strip of irrigated land. On the map it appears as a narrow band of dense population. If it were not for the Nile, the Sahara would extend across the entire continent, there would be no area of dense population in it anywhere, and Egypt would be wasteland, with no cities, railways, or farms.

Irrigating by the Nile. Farmers have been growing crops in the Nile Valley for a long, long time, probably for about 6000 years.

In the winter, the Nile shrinks and there is not enough water to irrigate the fields. By the middle of June the river is at its lowest. Then more water comes, and still more. Soon the river floods its banks and continues to rise until September.

In the early days, the farmers surrounded their fields with walls of earth. When the flood was at its highest, it filled the walled fields. When the flood went down, the water was allowed to flow out from the soaked fields. The flood waters were muddy. While the water stood still on the fields, the mud settled and left a thin layer of new, rich soil. When the fields were dry enough, farmers ploughed them and planted grain or other seeds.

With the old methods of irrigation, crops could be grown only during the winter, but now they are grown all year round. Dams have been built to hold back the water of the Nile. Most important for Egypt is the great dam at Aswân. Smaller dams have been built farther down the river. In the winter and spring, water is released from the storage basins behind the dams. Thus the farmers of Egypt have water the year round. They can grow two or even three crops on their land each year, instead of only one, as they used to.

Farming. In the spring, Egyptian farmers plant rice, corn, and millet. Wheat, barley, vegetables, and flax are grown during the winter. Clover, too, is planted during the winter and can be cut four or five times. It is needed as feed for the numerous cattle, donkeys, mules, and camels of Egypt. During the summer and fall, the cotton and sugar cane are harvested and the dates ripen on the palms. Cotton is the great cash crop of Egypt. Most of the cotton grown is exported.

The Nile Valley is chiefly a farming region. Its few factories use mostly agricultural raw materials. There are cotton gins to separate cotton from its seeds, textile mills, and mills for making cottonseed oil and cottonseed cake for stock feed. Some of the oil is used by soap factories. There are also flour mills and sugar refineries.

A railway follows the Nile up to Aswân, but the river is the chief means of transportation. Steamboats and many smaller boats travel on the Nile.

These ships are sailing on the Nile at Cairo. The ancient style of the boats contrasts with the modern apartment building.

Courtesy Egyptian State Tourist Administration



Egypt has only two very large cities, Cairo and Alexandria. Cairo, at the upstream point of the delta, is the largest city in Africa. It is a crowded and colorful city, containing over two million people of many religions and races. Caravan trails from many parts of the desert meet there, and Nile boats bring goods from the upper valley. Railways help to make it a trading centre.

Alexandria, founded and named by Alexander the Great, is today Egypt's chief seaport. Its site is a long, narrow strip of flat land jutting out between a lake and the sea.

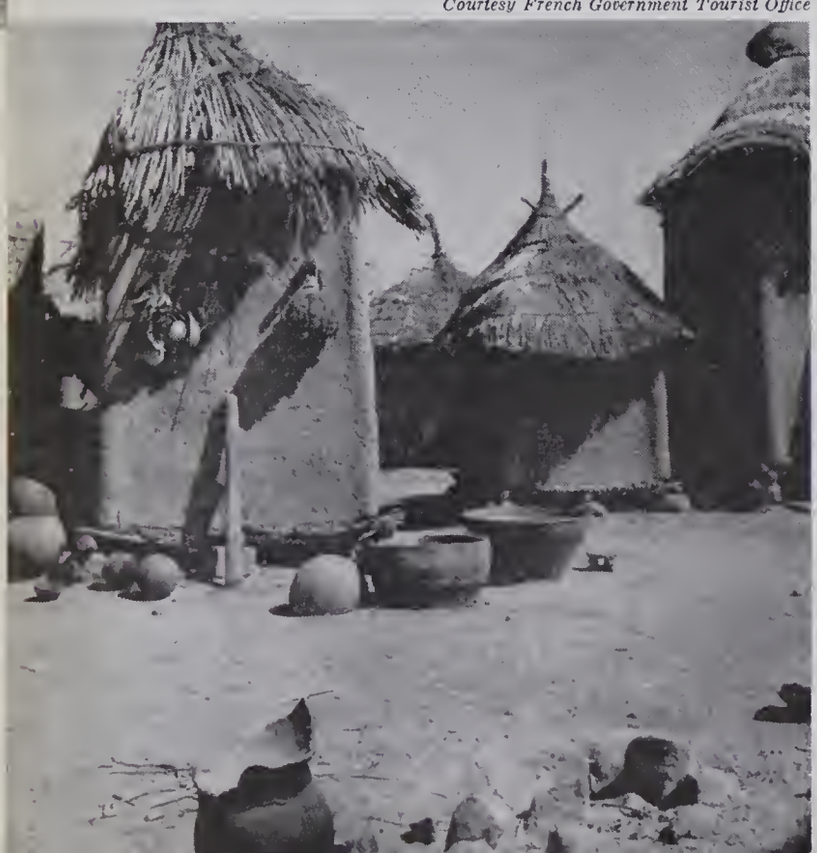
Egypt extends far east and west of the Nile, but few people live outside the irrigated valley. Two cities, Port Said and Suez, stand at the ends of the Suez Canal. This canal cuts across the Isthmus of Suez and is one of the most important waterways in the world. Until it was built, all the ships going to India, China, Australia, and the other eastern countries, had to go all the way around Africa. The canal saves weeks of travel and much money.

NATIVE PEOPLE SOUTH OF THE SAHARA

The native peoples south of the Sahara Desert belong to the Negroid or black race. In general, the African natives live in tribes, under chiefs. Although the greater part of the continent is now divided up as colonies of European countries, the chiefs and their tribes still manage most of the affairs of the everyday living of their people. The tribes differ from one another somewhat in appearance and in language and greatly in ways of living.

This picture is of a village in the French Sudan. The huts are used for storing grain.

Courtesy French Government Tourist Office



African ways of living. In earlier days, a few tribes lived mainly by hunting and gathering food. The grasslands of Africa have a greater abundance of wild animals than has any other region in the world. Antelopes, zebras, wild pigs, and many other animals were hunted. The rivers and lakes supplied fish. Wild fruits, nuts, and other plant foods were gathered.

Only a few tribes depended entirely upon hunting and gathering food. Most Africans were either farmers or herdsmen. The land was cultivated with hoes, and many different crops were planted together. In the warmer and moister parts of the continent, crops can be grown the year round. Seeds were planted at different times during the year, and there was no special time for harvesting the crops. The women went to the gardens each day and gathered that day's supply of food. In the regions with a very dry season, grain was harvested and stored away.

On the good grasslands, African herdsmen kept many cattle. Some of the cattle tribes lived almost entirely on milk, with a little meat now and then. They seldom ate any plant foods. Other tribes were both cattle keepers and farmers. On the poorer grasslands, nomadic herdsmen kept goats and sheep. A few animals were kept by farming peoples almost everywhere in Africa. Some

chickens, too, were kept on most farms. Camels and donkeys were common in the Sudan. Many of the grasslands of Central Africa cannot be used for cattle grazing because of the *tsetse fly,* which carries sleeping sickness. Cattle that are bitten by this disease-carrying fly usually die.

African homes were simple and suited to the climate. In most parts of Africa, the houses had walls of twigs woven together, and sometimes the walls were plastered with mud. Roofs were thatched, usually with leaves in the forest regions and with grass in the grasslands. Sometimes the walls, too, were covered with leaves or grass. Some tribes commonly made oblong houses, while others made circular houses.

African handicraft. The houses had little furniture. The beds were usually mats laid on the floor. Women made pottery bowls, jars for water or milk, and kettles for cooking. The quality of the pottery depended upon the skill of the women and the kind of clay they could get near their village.

Many men were skilled woodworkers. They made stools, decorated with carving, spear shafts, bows and arrows, knife and bow handles, small statues, and drums.

Among the Africans there were skilful blacksmiths and other metal workers. They worked in iron a very long time ago. It is possible that they learned to use iron as early as any people in the world. Their blacksmiths smelted the ore in little clay furnaces and hammered it into hoes, spearheads, knives, musical instruments, and ornaments. Some tribes also had workers in brass, copper, silver, and gold.

A changing Africa. You have seen a little of what African life was like. Of course, it varied from place to place and from tribe to tribe. That was natural when people had so little contact with one another, so little chance to exchange goods and ideas. Some tribes were very primitive, but other tribes had reached a high level of civilization before Europeans arrived.

How much change have Europeans brought about in African customs and ways of living? For a long time the Africans have been growing a number of plants that are native to America. It is believed that the Portuguese traders brought these plants to Africa from their American colonies. Corn is probably the American plant that has been of greatest importance to Africa. Most Africans do not raise it for sale or for animal feed. Each family raises only enough for its own needs. The women grind or pound it into meal and make a kind of porridge or mush. Corn is eaten green, too.

Cassava and peanuts are probably next in importance to the Africans. Another name for cassava is manioc. It grew originally in the Amazon region of South America. Sweet potatoes and tomatoes are other American plants that were introduced into Africa long ago.

Now, the African peoples are changing their way of life. More and more of them are going to school and being trained in the same manner as the peoples in Europe and North America. Modern transportation is making it easier to travel from one part of Africa to another. New cities are being built, mines and factories are coming into

These four pictures show African nurses at work in Nigeria. Many Africans are trained to do this type of work.

Courtesy United Kingdom Information



production. More of the African colonies are becoming self-governing, with their own elected leaders.

As you read the pages that follow, watch for other evidence of European and American influences on Africa. It is the clue by which you can understand the Africa of today.

MAPPING A TRANSITION REGION

From the maps in this book, draw the following lines on an outline map of Africa. Do not continue the lines east of the Nile.

1. In one color, draw the 10-inch and 20-inch rainfall lines. The space between them is the 10- to 20-inch rainfall region.
2. In a second color, draw the line that marks the edge of the frost-free region.
3. In a third color, draw a line for the northern edge of the grassland region.
4. Except in a few oases, the Sahara has less than two people to the square mile. Parts of it have no people at all. Use a fourth color to draw a line that stands for the southern edge of this great desert region of very sparse population.

Your map now shows a tangle of lines. They cross one another many times and make a bright band of color across your map. The area indicated by this band of color is the *transition region* between the Sahara and a very different Africa to the south of it.

LIVING IN CENTRAL AFRICA

The part of Africa lying in the low latitudes is usually called Central Africa. It has no exact boundaries, but for convenience you may think of it, in general, as the area that lies between the parallels of 17° north latitude and 17° south latitude. It contains four regions — the Sudan, the equatorial lowlands, the equatorial highlands, and a band of grassland to the south of the other regions.

THE SUDAN

The Sudan is the region of grassland south of the Sahara. It is not a political division, and it has no boundaries. Sudan is just a convenient name that people have used for a long time. There is also a country called Sudan, which lies in part of the region of Sudan. It used to be called the Anglo-Egyptian Sudan before it became independent of both England and Egypt.

New climatic regions. The Sudan is a transition region in climate and vegetation. Turn first to the rainfall map on pages 8-9. The line of 10-inch rainfall crosses the northern Sudan. Then there is a narrow band that has 10 to 20 inches of rain. The 20- to 40-inch rainfall region is also a narrow band except in the east. Farther south, but still in the grassland region, there is a large area that has 40 to 60 inches of rain.

One important difference between the rainfall of the Sahara and that of the Sudan is not shown on the rainfall map: the little rain that does fall in the Sahara comes mainly in the winter. In the grassland, most of the rain falls in the summer. In moving from the Sahara to the Sudan, then, you move from a region of winter rainfall to a region of summer rainfall.

The growing-season map shows another difference. The Sahara sometimes has frosty nights, and the edge of this region of occasional frost crosses into the northern part of the Sudan. However, in most of the grassland region there is never any frost.

A new vegetation region. The pictures on the opposite page show how the vegetation

changes southward from the Sahara. The first picture was taken in the desert, near its southern edge. The second was taken further south, on land that is almost desert. The grass is short and grows in scattered clumps. The trees are small, and there are not many of them.

In the third picture you see the kind of grassland that is found where there is more rain. Like most African grasslands, it has scattered trees. The trees with flat tops are acacias. Such trees are found over very large areas of African grassland.

The most important fact to remember about African grasslands is that they are regions of seasonal rainfall. They are lands with rainy seasons and dry seasons. To grow there, plants must be able to live without rain for several months.

Farmers of the eastern Sudan. The second picture on this page was taken in the eastern Sudan. If you were to follow the Nile upstream from Egypt, you would come to this region. Turn to the physical-political map on pages 276-277 and find Khartoum. This city is built on a point of land where two branches of the Nile come together. The one to the east is called the Blue Nile.

The Blue Nile flows down from the Plateau of Ethiopia. As you can see from the rainfall map, the highland has heavy rain. Most of it comes in summer. The heavy summer rain causes a great rush of water to flow down the Blue Nile. It is this water that causes the floods in Egypt.

Find the Sennar Dam on the Blue Nile. The dam provides water for a large irrigated area in the triangle of land between the two branches of the Nile. Cotton is the principal crop of this region. The date palm grows there, as it does in Egypt. Sorghum is the most common grain.

Above Khartoum there are many tribes living along the Nile. Those on the banks of the Nile must irrigate the land. Toward the south there is enough rain for a little farming without irrigation.



Courtesy British Information Services



Courtesy British Information Services



Ava Hamilton

If you travel southward from the Sahara, you find that the vegetation changes as the rainfall increases.



Courtesy British Information Services

A Sudan farmer works in an irrigated cotton field. Water for irrigation comes from branches of the Nile.

Drier lands of the Sudan. Turn to the map of Africa on pages 276-277. Lay your pencil across the map from Lake Chad to the mouth of the Senegal River on the Atlantic coast. You may think of your pencil as the dividing line between a land of nomadic herdsmen and a land of farmers. To the south of this land, farming is the principal occupation of the people. To the north, little farming can be carried on without irrigation. The people above the line are nomadic herdsmen. The region differs from the desert only in having more grass and other plants for grazing. Sheep, goats, and camels are kept.

This region has one famous old town. It is Tombouctou, on the Niger River where it makes its great bend to the south. There, on irrigated land, is one of the few places where farming can be carried on in the northern Sudan. The principal crops are rice, grown in summer, and wheat, grown in winter.

Craftsmen and traders of the Sudan. In the northern part of the Sudan are people who were craftsmen and traders long before the first Europeans came to Africa. Their living centred around cities of mud-walled houses. These cities are still trading centres of the Sudan. Tombouctou is one of them. Another is Kano, in northern Nigeria, where the craftsmen still carry on their old trades. They are famous for their cotton cloth, dyed blue with indigo, and they are skilful workers in leather and metals.

Farmers in West Africa. The land from the Gulf of Guinea northward is usually called West Africa. Most of the farming region of West Africa lies in the grassland. In the areas of *tropical rain forest* along the coast, *oil palms* and cacao beans are grown. There are still tribes in West Africa living as simply as the people whose huts are shown in the picture on page 286. The picture was taken in French West Africa. The walls of the huts are made of mud, and the roofs are thatched with straw.

The people who live there wear few clothes. They build their homes from materials that are all around them. They grow food themselves, but they grow nothing to sell. They have almost no contact with Europeans and live almost as simply as their ancestors did before Europeans came to West Africa.

Nearer the coast lived people who might

be considered typical African farmers. Ways of living in this region have changed greatly. The people have taken over more of modern industrial civilization than has any other large group of Africans. They are the ancestors of most American Negroes.

Most of West Africa is controlled by either England or France. The governments of these countries have sent out men to teach the Africans better methods of farming and have introduced new crops. European experimental stations find the crops best suited to the environment and then try to improve them. Some of the new crops and methods have been introduced to give the Africans a better supply of food, but the Europeans have also taught the Africans to grow crops for sale. Europeans benefit in two ways from such crops. The tropical products can be bought as raw materials by European factories, and the Africans can buy European goods with the money they get. Cotton is one of the most important of the crops grown for sale.

Vegetable oils are another valuable product of West Africa. Oils and fats are among the most necessary materials in the world. Oils are liquids such as olive oil. Fats are solids such as butter and lard. Oils and fats are needed in everyone's diet; they are necessary raw materials for making soap, glycerin, and many other products.

Most of the vegetable oils in the world come from seeds and nuts. Peanuts are one very important source of oil, and they grow especially well in the drier grasslands of the northern Sudan. Kano is one of the great marketing centres for the African farmers who grow peanuts. Many trees in West Africa produce nuts and seeds that are rich in oil. Most important is the oil palm. In the drier grasslands the shea tree grows wild. From its seeds a solid fat called shea butter is obtained.

Cacao beans are a third commercial product of West African farms. They grow on cacao trees and are the source of cocoa and chocolate. About two-thirds of the world's output of cacao beans comes from Ghana (the Gold Coast). Like so many other African crops, this tree came from America.



Courtesy British Information Services

This man is cutting away the palm fronds so that he can get at the fruit of this oil-palm tree.

Most of the commercial crops of West Africa are grown by the Africans on their own farms. In many cases they are planted among the millet and yams, as Africans have always planted their crops.

However, some products cannot be grown satisfactorily by African methods of farming, because they must be produced on a larger scale if they are to pay. Such crops are grown on plantations managed by Europeans. Rubber is one crop usually produced on plantations.

As much as possible, the governments in charge of the West African colonies try to keep production in the hands of the Africans themselves, because they are trying to help the African to become part of the world civilization as quickly as possible. The Africans were left far behind because they were

cut off from the rest of the world. Now they are catching up rapidly, wherever modern transportation has reached them. There are steamboats on the rivers. Railways reach far into the country, and trucks carry products over motor roads. Airplanes, of course, are an important means of travel. Still there are tribes that are almost out of reach.

Two great needs of the Africans are education and better protection for their health. Improved farming methods bring better food, and better food brings better health. Government health departments are also trying to prevent disease by teaching people better sanitation, by trying to get rid of insects that carry disease, and by providing doctors and hospitals.

EQUATORIAL LOWLANDS

The name Africa makes some people immediately think of hot, steaming forests, but actually there is only one such region in Africa. It is a large section, but it occupies only a small fraction of the huge continent.

What the maps show. On the vegetation map, pages 12-13, find the region of tropical rain forest. As you can see, it lies along the equator and extends westward in places along the coast of the Gulf of Guinea. The rainfall map shows that this region has more than 60 inches of rainfall in a year. Parts of it have a rainfall that is a great deal heavier than 60 inches.

Turn to the physical-political map of Africa on pages 276-277 and find the altitude of the forest region. The tropical forest region is almost entirely surrounded by much higher land except where rivers break through. Most of the tropical forest region is included in the valley of the Congo River and its tributaries. The name Congo Valley is sometimes used for the region; more often it is called the Congo Basin.

Although the equator cuts across the Congo Basin, the temperature of this region is not extremely high. The weather is never as hot as it is during the summer near the Sahara. However, the air is very humid, and this, combined with the warm temperatures,

Natives walking across a swinging bridge that crosses one of the tributaries of the Congo in the dense forest of the Congo Basin. In a drier part of the same region an elephant roams through dry grasslands.

Photos by Ava Hamilton





makes the weather quite oppressivc. The fact to remember about temperature along the equator is that the range is small. The range is the differenee between the highest and the lowest temperatures.

During most of the year there is a thunderstorm every afternoon and evening, and then the rain falls in a downpour. Most of the heavy rainfall comes in sueh storms, but even during the drier part of the year it usually rains every two or three days.

The vegetation map shows a large area of unbroken tropical forest in the Congo Basin. Early explorers thought this forest area larger than it really was. They followed the rivers and, as you see, there are ribbons of forest along the rivers far beyond the region of solid forest. On the higher land between the rivers, your vegetation map shows grassland with scattered trees, but the early explorers did not sce these.

Farmers of the Congo Basin. On the map of Afriea, pages 276-277, find the names of the two large politieal divisions that oceupy most of the Congo Basin. As the names indieate, one is a eolony of Belgium and the other of Franee. Under the governments of these countries, the region has been developed in much the same way as West Afriea. Ways of living are ehanging in these eolonies.

Before the Europeans came, the people of the forest did not do as mueh farming as the West Afrieans did. They hunted, fished, and gathered foods that grew wild in the forest. Now, most of these people have become farmers. Bananas, cassava, and eorn furnish most of the food for the people. They also grow other grains and vegetables, including sorghum, peanuts, tomatoes, and beans.

Palm nuts from the oil palm are now the leading commercial produet of the forest region. The Afrieans still gather them from wild trees, but they also plant the palms in their gardens. The pieture on page 291 shows what the oil palm looks like. The man



Courtesy United Nations

A chief of a Nigerian tribe reads an address. Notice the colorful costumes.

is eutting away some of the large, stiff leaf stalks so that he can rcaeh the clusters of fruit.

The *raffia palm* is another useful tree. It too has fruit from which oil can be pressed, but fibre from the leaves is the most valuable produet. Rattan palms furnish fibre and light, flexible strips of wood. Along the eoast eoeonut palms grow. The meat of the nuts is dried, and the *copra* (dried meat of the eoeonut) is shipped to Europe, where the oil is pressed out.

Other types of forest trees furnish valuable produets. A gum ealled *copal*, used in varnishes, is colleeted from several kinds of trees. Nuts from the cola tree are used in making drinks that are popular in America and Europe. Rubber eomes from a number of different kinds of trees and vines. Coffee trees also grow there.

Improved transportation. Products could not be exported from the Congo Basin without good means of transportation. The rivers have falls and rapids, but between these interruptions there are long stretches of navigable water. One of the first steps in improving transportation was to build railways around all the places that were not navigable. Longer railway lines were built later to save transferring goods between boats and trains, to connect waterways, and to cut off some of the great curves made by the rivers. New motor roads have been built to carry products by truck to the rivers and railways.

Progress in the Congo Basin. The people of the tropical-forest region now have many village schools in which children learn the things you learned in your early years at school. There are also a few higher schools. Some of the schools train young men and women to be doctors or nurses. Look at the photograph on page 287 of African girls being trained as nurses.

HIGHLANDS OF EAST AFRICA

Turn back to the physical-political map on pages 276-277 and find the highlands of East Africa. They form a region of high plateaus. The surface is very uneven. Most of the region is between 2000 and 5000 feet high, but large areas rise still higher. Deep valleys cut through these higher lands and huge snow-capped mountains tower above them. Near the centre of the plateau lies Lake Victoria, the second-largest lake in the world.

Vegetation and climate. The vegetation map shows that most of East Africa is covered with the same kind of vegetation as that found in the Sudan. It is grassland, with scattered trees. The third picture on page 289 was taken in this region. The rainfall map shows that the climate becomes drier toward the east, and a wide band of desert begins a little south of the equator and follows the coast northward.

The rainfall is seasonal. It follows the shift of the sun north and south with the seasons. The part near the equator has two rainy seasons a year, while the regions to the north and south have only one.

Coastal regions of East Africa. Many Arabs live along the coast and on the island of Zanzibar. There are also many Europeans and many people from India. The larger part of the population is Negro, however, and is made up of people of many tribes who have moved to the coast.

For a long time, large areas there have been laid out in plantations. On the plantations, three products — bananas, coconuts, and spices — are the most important. The whole island of Zanzibar, a few miles off the coast, is said to smell of cloves. About four-fifths of the world's supply of cloves comes from this island. Cloves are the dried flower buds of the clove tree.

Plateau region. Did you notice the lions in the picture on page 289? East Africa has more interesting wild animals than has any other region in the world. African elephants look like the one in the picture on page 292. They have much larger ears than Asiatic elephants. Many tall giraffes, dozens of different kinds of antelopes, and beautifully striped zebras wander over the grasslands. Wart hogs, a very ugly kind of wild pig, scuttle backward into their burrows when alarmed. Huge rhinoceroses bask in the sunshine.

People of East Africa. The native people of East Africa belong to many tribes. Before the Europeans came, there were two ways of making a living in this region, cattle raising and farming. No tribe did both of these things.

Some parts of East Africa are too dry for farming without irrigation. In such places there are only herdsmen. Some places are



Courtesy United Kingdom Information Services

A scene in the highlands of East Africa. The land in this district is intensively cultivated. The mountains in the background are volcanoes.

even too dry for cattle, and there people keep sheep and goats. Most of the region, however, has enough rain for farming during the rainy seasons. The parts where there is just enough rain for crops are much the same as the parts of West Africa where there is just enough rain for farming. In the wetter parts, such as Uganda, just north of Lake Victoria, the crops are much the same as those of the tropical rain forest.

The higher regions. The map on pages 276-277 shows the higher regions that rise above the level of the plateau. At the north are the high mountains and plateaus of Ethiopia. Another high region stretches south along the boundary between Uganda and Kenya, across Kenya, and into Tanganyika. Still another lies west of Lake Victoria.

The highlands in Ethiopia have very heavy rainfall in summer. As you know, this heavy rain causes the summer floods of the Nile. It also gives Ethiopia a forest region. There is much good farm land there as well.

Ethiopian crops are like those grown in other parts of Central Africa. The people keep cattle, sheep, and goats. For the most part they eat the products of their farms, selling the surplus in the nearest town.

The farmers of the highlands have an advantage over most other farmers. Crops can be grown the year round. All tropical and subtropical crops will grow there except for a few, such as the oil palm and rubber and cacao trees, that require very high temperatures. It is warm enough for bananas and sugar cane, but at the same time the climate is not too hot for the growing of



Courtesy Union of South Africa Government Information Office

A copper mine in the southern end of the mining region. A baobab tree stands in the foreground.

vegetables and grains that are at home in the middle latitudes.

Changes in East Africa. Changes are coming to East Africa, just as they are to West Africa and the Congo Basin. Most of East Africa is controlled by Britain. Many years ago the British began to encourage the African farmers to grow cotton, because cotton was needed in the British cotton mills. They began in Uganda, around the north end of Lake Victoria. This is a densely populated region, and it had a well-organized government under its own rulers. This government has continued under the British, who only keep the peace, try to improve the health of the people, and advise them how to improve their ways of living.

East Africa is a large area, and its people are scattered. Progress has been slower there than it has been in the more densely populated regions of West Africa. Ways of living are being improved, however. People of the cattle tribes are learning to take better care of their animals and to keep better breeds than the native African cattle. The Africans are learning better methods of farming, and they are learning to grow new crops. There are schools where African boys learn scientific dairying and farming. When these boys go back to their own tribes, their neighbors will learn from them.

People find it harder to live and work and stay in good health in low latitudes than in middle latitudes. The Africans, whose ancestors have lived in equatorial Africa for thousands of years, are at home in the climate. With good food and a knowledge of how to prevent disease, they can live well in Central Africa. If Central Africa is to come fully into our world civilization, the development must come about through the Africans themselves. Europeans and Americans can help them to get started by passing on to them the knowledge and skills that will help them to improve their economy.

A few Europeans do live comfortably in the highlands, however. Some of them live in towns. The largest European town in East Africa is Nairobi, the capital of Kenya. The Europeans in the towns are merchants, doctors, teachers, government officers, radio operators, mechanics, engineers, and their families.

On some of the higher lands are settlements of European farmers. The farms are usually large plantations, with many hired African workers. The owners have brought *cool-climate crops*, such as wheat, barley, oats, potatoes, flax, and fruits to the farms.

Other crops are grown for export. Coffee, tea, sugar cane, and sisal are plantation crops. Sisal is a Mexican plant that can be grown successfully only in a few places. Parts of East Africa are well suited to this valuable fibre plant.

MINING IN CENTRAL AFRICA

You can see on the vegetation map that grasslands with some trees stretch across Africa at about 5° south latitude. Along the rivers, bands of tropical forest reach out into these grasslands. The vegetation is much like that of the Sudan and East Africa.

Mines and minerals. In one important way parts of this area differ from other African regions you have studied. A great mining region extends southward from the southeastern part of the Belgian Congo across Northern Rhodesia and Southern Rhodesia.

The most widely distributed mineral is copper. The Congo-Rhodesian area produces about twenty per cent of the world's total supply of copper. The picture on the opposite page shows a copper mine in this region. It also gives you an idea of the kind of vegetation commonly found there. The strange-looking tree is a baobab. Baobab trees are scattered over nearly all of the dry grasslands. They have large trunks, which often become hollow. The Africans use the hollow trunks as cisterns, filling them with water for the dry season.

The mining region also has important deposits of lead, tin, zinc, iron, chromium, and diamonds. The world's largest diamond mines are in Tanganyika. There is coal that can be used for smelting ore. Railways run to ports on the eastern, western and southern coasts of the continent. These are the longest railway lines in Africa.

The southwestern Belgian Congo has radium and uranium mines. It is one of the few parts of the world in which radium ore is found. A little mining is carried on in other parts of Central Africa, but most of the area has not been thoroughly prospected for valuable minerals.

LIVING IN SOUTH AFRICA

There is no sudden change in the natural environment to tell you where South Africa begins. The parallel of 17° south latitude is sometimes used as a boundary. Some people use the Zambesi River as a dividing line between Central Africa and South Africa.

A TRANSITION REGION

If you wish, you may show these possible dividing lines in color on an outline map of Africa. Add the 40-inch rainfall line, the 20-inch rainfall line, and the line that marks the southern edge of the frost-free region to your outline map. Your colored lines show about where the transition region lies in South Africa.

A wide grassland. Except along the seacoasts, this whole region is grassland with scattered trees. As in other grasslands you have studied, the plants must be able to live through a long dry season. This grassland differs from those of East Africa in having only one rainy season in the year.

Most of the people of this grassland region are of the Negroid race. They depend mainly on farming for a living, but they also keep animals, hunt, and gather wild products. Like the other grasslands of Africa, this region has many wild animals.

Crops are grown mostly in the summer. The winters are warm enough for many crops, but they are too dry. Sorghum, smaller varieties of millet, and corn are the principal crops.

A few Europeans live in this grassland region. There are mines in parts of the region, and lumbering is carried on in places. Some of the Europeans manage the mines and lumbering operations. Most of the European farmers raise cattle. Their

land is used chiefly for pasture or for *forage* crops, especially corn and sorghum.

LANDS OF EUROPEAN SETTLEMENT

When Portuguese traders began sailing around Africa to India, they needed a place at which they could stop on the way. The journey was a very long one for the little ships of four hundred years ago. A Portuguese settlement was founded at the mouth of the Zambesi. The little settlement grew to be the present Portuguese colony of Mozambique.

Dutch ships also sailed around Africa to the East Indies. They too needed a stopping place on their way. A Dutch colony was founded at Capetown, near the Cape of Good Hope. The settlers grew wheat and vegetables to supply the Dutch ships. More and more settlers came, spreading inland. English settlers came later. The settlers of the two nationalities did not get along well together. After many quarrels, the English took control of the Dutch areas and the Dutch moved inland. The separate colonies were later joined to form the Union of South Africa.

Today the Union of South Africa, like Canada, is a Dominion of the Commonwealth of Nations. It carries on its own government as a fully independent country, but it is closely associated with Great Britain and with the other Dominions of the Commonwealth.

A Mediterranean region. How far from the equator is the southern tip of Africa? What other part of the continent is about the same distance from the equator? The southern coast of Africa, like the northernmost strip of coast, is a region with a Mediterranean climate. Nearly all the rain in this region comes in the winter. The temperature is always mild. Streams flowing from the mountains are used for irrigation.

Wherever there is a region with a Mediterranean climate, products are much the same. As you might expect, then, the region around Capetown is famous for its oranges, grapes, and other fruits. Some of the fruit is dried in the hot summer sunshine, and some is made into jam and wine. Fresh fruit and vegetables are sent in refrigerator ships to England and even to America.

Can you think of a reason why America and England should be good markets for fresh fruit raised in South Africa? When is it summer in South Africa? What season is it in England when it is summer in South Africa? Most of the exports from this region are shipped through Capetown.

As in Mediterranean regions that you have studied elsewhere, wheat and other grains are grown at the southern tip of Africa. They are usually winter crops. Sheep and cattle graze on the drier hillsides.

The eastern coast. The climate of the eastern coast of South Africa is somewhat like that of Florida. A region of tropical and subtropical products extends northward from Durban. It includes the narrow coastal lowlands as far as the Zambesi Valley.

The climate is warm the year round. Summer has more rain than winter, but there is no dry season. As you can see from the rainfall map, the annual rainfall is from 40 to 60 inches for most of the region.

On this narrow strip of plain, sugar-cane and banana plantations stretch for miles and miles. Cotton, sisal, pineapples, tea, vanilla, and corn are grown also.

Plants producing oil are of great importance. There are groves of coconut palms and fields of peanuts. Castor-bean plants grow to the size of trees. Castor oil is made from the seeds. Cashew nuts also are grown for oil. These are the same delicious curved cashew nuts you have no doubt often eaten.

The east coast of Madagascar has even more rain than the east coast of the continent. Turn to the map on pages 12-13 to find the natural vegetation. It is the only region in East Africa with heavy forests. Tropical crops are grown there, as on the

mainland. Rubber, copal, and raffia are forest products of this region.

South African plateau. The physical-political map on pages 276-277 shows you that South Africa has only a narrow strip of lowland along the coast. The rest is high plateau.

Your map shows the mountain range called the Drakensberg along the eastern edge of the plateau. On the side toward the sea, it rises abruptly. On the west side, it slopes gently to the plateau, which is almost as high as most of the mountain region. The Drakensberg range is really only the raised edge of the plateau.

The plateau is a grassland region. Most of it is very dry grassland, becoming drier toward the west. At this latitude, the winds are usually from the east. They cannot bring much rain to the plateau because they must rise over the Drakensberg before they reach it. They lose most of their moisture on the eastern slopes of the mountains.

The drier western part of the plateau has a very small population. Except where it is irrigated, it can be used only as grazing land. Even for that purpose, it will not furnish feed for many animals and so cannot support many people.

The eastern part of the plateau is excellent grazing land. It is covered with tall grass. This is one of the great sheep-raising regions of the world. The raising of cattle, horses, pigs, and poultry is important, too. Crops are chiefly corn, sorghum, and hay, grown as feed for the animals.

Living in South Africa. On page 301 is a picture of Johannesburg, the largest city in South Africa. It looks just like a European or Canadian city. You could live there without having to make any important changes in your way of living. The Union

The subtropical conditions in this part of the Transvaal allow the farmers to grow fruits and plants that cannot be grown on the high plateau. The orchard in the picture is made up of citrus trees.

Courtesy Union of South Africa Government Information Office



of South Africa is thoroughly Europeanized; that is, it has become like Europe in its way of living. The land is divided into farms. There are roads, railways, and towns. The people wear European clothes and eat European food. Even the native Africans who live there have, for the most part, adopted European ways of living. Most of them work on the farms of the Europeans, on the railways, or in mines and factories. Some of them drive trucks. In short, the natives of modern Africa have learned to do all the many kinds of work that people do in Europe or in Canada.

SOUTH AFRICAN MINES

In spite of all the farm and animal products the South Africans have to sell, their greatest wealth is in minerals. Gold and diamonds draw the settlers inland. They account for the spots of dense population on the plateau and for the growth of some of the largest cities.

Gold mines. More gold is mined in South Africa than in any other region in the world. Most of it is mined in a range of hills called the Witwatersrand, or The Rand, near Johannesburg.

Johannesburg, shown in the picture on page 301, owes its growth almost entirely to the gold mines. It is the largest city in Africa outside of Egypt. You can see in the picture that one section of the city has many large, modern buildings. You may think of it as typical of the differences between South Africa and the rest of the continent. Johannesburg also has slums not shown in this picture. Many of the Negroes live in the slums.

Diamond mines. Diamonds are more plentiful in South Africa than in almost any other part of the world. For many years the world's largest diamond mines have been those at Kimberley; they are now second in size to those of Tanganyika. The diamonds are scattered through a hard mass of material that was once lava. The rock is dug out of the old volcano, and is crushed, ground, and sifted by machine. When as much of the dirt as possible has been removed, the remainder is placed on a slanting screen that has been covered with grease. The screen is shaken by machinery. The diamonds stick to the grease, while the last of the dirt is shaken off.

Other minerals. The great copper region of Central Africa also extends into the Union of South Africa. South Africa as a whole has not been thoroughly prospected for valuable minerals. There may be many deposits that are not yet known. Even some known deposits of ore are not mined, chiefly because of transportation difficulties. Coal is mined in a number of places, and there seems to be all that South Africa is likely to need.

THE GEOGRAPHY WORKSHOP

I. CANADA AND AFRICA

Measure on a globe to find out what part of Africa is nearest your own home. What Canadian province is nearest to Madagascar? Which is nearer to Cairo, San Francisco or Edmonton?

II. THE WORLD IN YOUR COMMUNITY

Do you think Africa is important to your own community in any way? Has it any influence on your own way of living?

You know, of course, that Egypt influenced our whole civilization. To this area

we owe the far-a-way beginnings of our way of living.

Many Canadians have gone to Ethiopia and other parts of Africa to help to improve education and farming methods. Many others have gone as missionaries. When these people return to Canada, they are willing to tell about their work in Africa.

As you studied the geography of Africa, you may have noticed that the names of many of the plants and products seemed strange. Try to learn as much as you can about them. A large dictionary along with your text should help you to understand them. Write down all that you can discover about each of the following: baobab trees, cacao, cassava, cola, copal, copra, guava, millet, pomegranates, raffia, rattan, shea butter, sisal, sorghum, and yams.

Most African exports are raw materials that must be manufactured before they are ready for use. Except for cloves and a few other products, you cannot buy the exports in the stores just as they left Africa. They have been processed in another country.

Collect manufactured products made from raw materials that might have come from Africa. For example, a rubber ball may stand for African rubber. Beside each article in your exhibit, place a card naming the African material that might have gone into it.

You can make an interesting background for your exhibit with a large outline map of Africa. Label the following regions: the Tell, the Atlas Mountains, the Nile Valley, the Sahara, the Sudan, the Plateau of Ethiopia, West Africa, the Congo Basin, South Africa, the Highlands of East Africa, and the island of Madagascar. Attach to the map samples of African products, such as peanuts, cashew nuts, cotton, coffee, tea, cloves, sugar, dates, a strip of rattan, part of a head of sorghum. Put them in the right regions.

III. COMMONWEALTH COUNTRIES

Draw an outline map of Africa. Shade in red the parts that belong to the Commonwealth of Nations. What parts enjoy the same freedom as Canada in governing themselves? The Federation of Rhodesia and Nyasaland has almost as much control over its own affairs as Canada has.

Of course you know that Canada has two official languages. You have only to look at a dollar bill or a postage stamp to realize that our government uses both the English and the French languages. The Union of South Africa also has two official languages. Try to discover what the two main languages are.

What did you read on page 300 about the amount of gold mined in the Union of South Africa? Is gold mining more important or less important in Canada? The *Canada Year Book* will help you to get accurate information.

The city of Johannesburg. The range of hills called The Rand stands at the very edge of the city.

Courtesy Union of South Africa Government Information Office





Courtesy Union of South Africa Government Information Office

Highly skilled workers cut the diamonds from South African mines.

IV. TRAVEL IN AFRICA

In reading about Africa, you found the following statements: "In many places the edge of the plateau is so steep that people cannot climb it easily. Rivers tumble off the edge in swift rapids and beautiful waterfalls"; "Africa has only a few great rivers, and even on these it is impossible to travel by boat from the coast to the interior of the continent"; "Even the river mouths do not make good harbors"; "However, in most of the grassland region there is no frost at any time"; "Beginning along the Atlantic coast of Africa, is a desert region so large as to be almost beyond imagination."

All but one of these statements are part of the answer to the following question: Why is travel in Africa difficult? Which one of these statements should not be included here because it does not answer the question?

V. WHAT YOU CAN READ FROM PICTURES

In the picture opposite, you are looking down at the Nile from an airplane that is flying very high. The river is the light-colored irregular band near the centre of the picture. As you look at the picture, you are looking toward the south. The part of the river you see is upstream from Cairo, and the view covers about ninety miles.

In the picture, is the river flowing toward you or away from you? Which side of the picture is east and which is west?

The dark band that follows the Nile is the land irrigated from the river. The light lines are irrigation ditches. Some of the fields look light because they have been flooded with water from the irrigation ditches. The irrigated area looks dark because of the vegetation that grows on it. The desert to the east and west looks lighter because it has scarcely any vegetation.

Now turn to the population map on pages 14-15. How does the population along the Nile differ from the population of land to the east and the west? Write a few sentences telling how the picture explains what you see on the population map. Your first sentence may begin like this: "There is a narrow band of dense population along the Nile because . . . "

VI. EUROPEAN INFLUENCES IN AFRICA

In this book you have seen many pictures of scenes in Africa south of the Sahara. Make a list of the scenes that show the effect of European influence in Africa. Make a second list of the scenes that would look just the same if no European had ever come to Africa. If everyone does not agree, discuss the doubtful pictures and let the class decide whether they belong in the first or the second list.

VII. USING THE POPULATION MAP

In working out the quiz given below, you will need to use the population map and many other maps. Look up any information you need. Under each number, you are to choose the best one of the three endings given for the incomplete sentence.

1. The population map, pages 14-15, shows a number of areas where no people live. These regions are uninhabited because:

a. scarcely any plants grow there.
b. they are too hot.
c. they are covered with swamps.

2. In northern Africa, in the southwest, and in the eastern part, there are regions with less than two people to the square mile. Few people live there because:
a. the regions are extremely dry.
b. the regions do not have good transportation.
c. the regions happen never to have been settled.

3. Parts of the northern and southern coastal regions of Africa have more people than areas a few miles inland. Which of the following statements tells why?
a. It is too hard for people to cross the mountains to reach the interior.
b. On a continent as hot as Africa, people would rather live where they can enjoy sea breezes.
c. These coastal regions have a better climate for farming.

4. There is a large area of fairly dense population north of the Gulf of Guinea. Which of the following statements does *not* help to explain why there is an area of dense population north of the Gulf?
a. It has plenty of rain for farming.
b. It is south of the Sahara Desert and north of the equator.
c. It has better transportation than most of Africa.

5. There is a region of dense population around Lake Victoria. It can be explained in part by the fact that:
a. rainfall is heavier there than in any other part of Central Africa.
b. the region is very good farming country.
c. there is no frost in winter.

VIII. PICTURES TO SORT

Imagine you have the five African pictures listed below. You are to sort them according to region. Do not try to tell exactly where each picture was taken. You need only sort them according to the following large regions:
a. A Mediterranean region.
b. A desert region. Remember that deserts include oases.
c. A grassland region.
d. A tropical-forest region.

1. A grove of date palms, with an irrigation ditch.

2. A herd of cattle grazing. There are a few widely spaced trees in the picture.

3. A small clearing surrounded by tall trees that grow close together. Vines climb over the trees. Oil palms, cassava, and banana plants grow in the clearing.

4. A flock of goats grazing on scattered clumps of grass. One goat is nibbling leaves from a bush. A man wearing long robes is riding away into the distance on a camel.

5. A grove of orange trees on irrigated land. There is a vineyard on a hillside in the background.

IX. AFRICA IN THE NEWS

Have you seen any articles about Africa in the newspapers lately? Africa does not ordinarily get into the newspapers as often as Europe does, but if you watch for a while you will be sure to find something. When you do, locate the place mentioned as nearly as you can on the maps in this book. Do these maps help you to understand what is said in the newspaper? Does anything else you have learned in this book help you to understand the information included in the newspaper article?

Acme Photo




Atlantic Ocean
NORTH AMERICA
GREENLAND (Den.)
Thule
Anchorage
ICELAND
Bering Strait
North Pole
Polar Ice Pack
Arctic Ocean
SVALBARD (Nor.)
Bering Sea
London
Paris
Berlin
EUROPE
Moscow
Leningrad
Gorki
Arkhangelsk
Ob River
Yenisey River
Igarka
SIBERIA
Arctic Circle
KAMCHATKA PENINSULA
Sea of Okhotsk
Lena River
SAKHALIN
KURIL ISLANDS
Odessa
Dnepr River
Don River
Volga River
URAL MOUNTAINS
SOVIET UNION
Black Sea
Istanbul
Rostov
Ural River
Irtysh River
Novosibirsk
Amur River
Lake Baikal
MANCHURIA
Vladivostok
Sea of Japan
Tokyo
PACIFIC Ocean
TURKEY
Ankara
CAUCASUS MTS.
Astrakhan
Aral Sea
Caspian Sea
Baku
Ulan Bator
MONGOLIA
LEBANON
ISRAEL
SYRIA
Jerusalem
Cairo
JORDAN
Baghdad
IRAQ
Tehran
Lake Balkhash
Tashkent
Samarkand
TIEN SHAN
GOBI
INNER MONGOLIA
Mukden
Peking (Peiping)
Tientsin
KOREA
Seoul
Osaka
SINKIANG
Yellow Sea
West Longitude
East Longitude
50°
60°
70°
80°
100°
120°
140°
160°
180°
40°
30°
20°
0°


ASIA
Scale of Miles
0 100 200 400 600 800
National Capitals
Other Cities
Shading from green through yellow, brown, and red indicates increase in altitude. Figures show approximate altitude in feet for corresponding color.
10,000 ft.
5,000 ft.
2,000 ft.
1,000 ft.
500 ft.
ARABIAN PENINSULA
Red Sea
Persian Gulf
Medina
Riyadh
Mecca
YEMEN
ADEN
Aden
AFGHANISTAN
Kabul
PAKISTAN
Lahore
Karachi
HIMALAYA MOUNTAINS
NEPAL
Mt. Everest
BHUTAN
PLATEAU OF TIBET
New Delhi
Ganges River
Calcutta
Bombay
INDIA
Arabian Sea
Bay of Bengal
Madras
Rangoon
BURMA
Irrawaddy R.
PAKISTAN
Nanking
Shanghai
East China Sea
Chungking
Yangtze River
Canton
Victoria
HONG KONG
FORMOSA
Tropic of Cancer
Hanoi
LAOS
Menam R.
THAILAND
Bangkok
Mekong R.
VIETNAM
CAMBODIA
Saigon
South China Sea
Manila
PHILIPPINES
LUZON
MINDANAO
Pacific Ocean
Colombo
CEYLON
MALDIVE ISLANDS
Strait of Malacca
MALAYA
Singapore
SUMATRA
BORNEO
CELEBES
INDONESIA
TIMOR
Jakarta
JAVA
Equator
Indian Ocean
MADAGASCAR
AUSTRALIA
Tropic of Capricorn
North Latitude
South Latitude
20°
10°
0°
10°
20°
30°
50°
60°
70°
80°
90°
100°
110°
120°
130°



SOUTHWESTERN ASIA

Southwestern Asia is a very large area — about as large as the territory covered by the ten provinces of Canada. As you can see from the physical-political map, most of it is a highland region, and a dry barren highland at that. The only places where there is enough rain for grass and trees to grow are the narrow strips along the sea coasts and the mountain slopes. Some people of southwestern Asia are nomads who depend upon their animals for a living, others live and work in the towns and cities, but most of them are farmers who live in the coastal lands, oases, and irrigated areas. The population is sparse.

Changing customs. Slowly the countries of southwestern Asia are changing as western ideas and methods spread toward the east. Some of them still dress the way their ancestors dressed, but others wear clothes like ours. Caravans of camels and horses are still used, but railways, highways, and air lines are being developed. Most village houses are built of stone or sun-dried brick, with flat roofs, but in the cities there are buildings much like those in our own cities. Machinery is being introduced both on farms and in industry. Israel and Turkey are the most advanced countries in southwestern Asia at the present time.

Civilizations. Southwestern Asia one of the homelands of ancient ization. It and its neighbor, Egypt, have a longer written history than any other part of the world. The civilizations and empires of the Sumerians, Babylonians, Persians, and others flourished in the Tigris-Euphrates Valley thousands of years before the birth of Christ. Find these rivers on the map on pages 198-199.

This land has often been called a "bridge" between the continents of Europe, Asia, and Africa. Years ago, when transportation by land was slow and dangerous, caravans of camels from distant China and India wound their careful way across this region. Armies of conquest marched across it. Today it is no longer an important centre of trade, or a route of conquest. Traders now use the Suez Canal instead of the ancient land route when sending goods from the East to the West. Southwestern Asia is important to the rest of the world today because of its oil wells.

WHAT WE CAN LEARN FROM MAPS

LOCATING SOUTHWESTERN ASIA

1. Southwestern Asia is made up of the following: Turkey, Syria, Lebanon, Israel, Jordan, the Arabian Peninsula, Iraq, Iran, and Afghanistan. Find these places on the physical-political map, pages 304-305. Which country is in both Europe and Asia? What countries are nearest to Africa?

2. Print the names of the countries of southwestern Asia in the correct places on an outline map of Asia. Color the part of your map that shows southwestern Asia. This will show you how these countries are located in relation to the rest of Asia.

3. Southwestern Asia is sometimes called the "Land of the Five Seas." Look at the map and name the two large seas that border southwestern Asia on the north. What three large seas border it on the west and the southwest? Print the name of each of these five seas on your outline map of

Camels and an automobile crossing the desert. Ancient and modern means of transportation are used side by side.

Courtesy Shell Oil Company





Philip Gendreau

Domed mosques and slender minarets and, in the foreground, the busy bazaars and the crowded streets of Istanbul.

Asia. Two of the seas are named on the physical-policital map of Europe, but not on the map of Asia.

4. Find two gulfs that border southwestern Asia. What large sea is between southwestern Asia and India?

THE LAND AND ITS PEOPLE

Turn to the population map, pages 14-15, to find what parts of southwestern Asia are most densely populated. Which country has the most people? What parts of southwestern Asia have very few people? Are these parts highlands or lowlands?

CLIMATE AND VEGETATION

Perhaps you will find it hard to explain the very sparse population in some parts of southwestern Asia. Other things besides the surface of the land help to explain why people live in certain areas. One of the important influences on where people settle is climate.

1. Turn to the map on pages 8-9 and tell whether the rainfall is evenly or unevenly distributed over southwestern Asia. What amount of rainfall is there in most of southwestern Asia? What part of Africa does southwestern Asia resemble most?

2. See if you can use the following facts to explain in part the light rainfall in southwestern Asia. In winter, along the west coast, in latitudes from 30° to 40°, the winds blow from the west. Which parts of southwestern Asia will have the most rain in the winter? Which countries of southwestern Asia have west coasts in these latitudes? These coastal lands have a Mediterranean type of climate.

3. Use the physical-political map to see where the parallel of 30° north latitude crosses southwestern Asia. South of this line the winds are usually from the northeast. As these blow toward the southwest, they pass over land most of the way. The winds are heated and take up moisture. What does the rainfall map show about rainfall in the mountains of southwestern Asia?

4. Look again at the map and notice that most of Iraq is lowland. Turn to the population map, pages 14-15. Are the lowlands in Iraq sparsely or densely populated? Use the rainfall map to help to explain your answer.

5. How much rainfall has most of Arabia? In the southeastern part of Arabia there is a region called the Sandy Desert. Can you imagine how that part of the Arabian Peninsula looks?

6. You will recall that temperatures do not depend entirely on latitude. They are affected also by altitude and distance from large bodies of water. There is a great

difference between the summer and the winter temperatures in the high dry lands of southwestern Asia, and night temperatures there are much lower than day temperatures. People of the deserts need protection from both heat and cold.

7. Turn to the vegetation map on pages 12-13. Using this map and the one on pages 8-9, decide where you think people can farm without irrigation. Where are the largest areas of desert vegetation? Where are the tropical rain forests?

THE PEOPLE AND THEIR COUNTRIES

WHERE EUROPE AND ASIA MEET

For thousands of years Turkey has been the meeting ground of the peoples of Europe and Asia. Study the maps on pages 198-199. Notice that Turkey is divided between two continents, Europe and Asia, but that most of it lies in Asia. Find the Dardanelles, the Sea of Marmara, and the Bosporus on the map on page 242. These bodies of water connect two seas but separate two continents.

Turkey in Europe. Much of European Turkey is barren and produces little. The most fertile part is the narrow strip of land near the Bosporus on which the city of Istanbul stands.

Many people pass through Istanbul when they go from Europe to Asia, for it is located on the water route between the Mediterranean and Black seas. It is one of the busiest crossroads of the world. If you were to wander for one day through the streets and bazaars of this city, you might hear as many as thirty languages spoken.

Istanbul is becoming more and more like a western city, but much of the old east still remains. The most important places in the lives of many of the people are the domed mosques, where they worship, and the bazaars, where they examine goods and bargain with the merchants. There, piles of bright silks, rugs, and slippers attract the eye. There are no large manufacturing industries in Istanbul, but many of the articles sold in the bazaars are exported.

The coastal lands of Turkey. Most of the people in Asiatic Turkey live along the western and southern edges of the peninsula. These coastal lands have a Mediterranean climate. The part of Turkey that borders the Aegean Sea is made up of fertile valleys separated by high ridges.

Though the plains are small, most of the people make a living by farming. Although other grains are grown, wheat is the leading crop. Indeed, enough wheat is raised so that some can be exported. Both figs and raisins are important exports. Cotton is also grown in this region. The production of cotton is increasing, and the textile industry of Turkey is growing. Another important export is tobacco. The chief tobacco-growing region is along the coast of the Black Sea, where rain falls during the summer as well as during the winter and the soil is fertile.

The most important seaport of Asia Minor is Izmir (also called Smyrna). It exports the products of Asiatic Turkey and receives imports for its use. Izmir is famous for the manufacture of beautiful Turkish rugs.

Living on the plateau. A large part of Turkey is a dry, treeless plateau rimmed by mountains. In winter the plateau is bitterly cold and covered with snow. During the scorching summer, dust storms rage and some rivers dry up in their beds.

In places, water from oases can be used for irrigation, but most of the land is used, as you might suspect, for grazing sheep and goats. Turkey is the home of the angora

goat, which has a long, silky fleece called mohair. Much of the wool and mohair is exported, but some of it is made into rugs and carpets in homes and factories. Wheat is also grown in the damper areas of the plateau.

Transportation on the plateau is difficult and expensive, for steep mountain slopes make travel difficult. Only a few rivers flow from the highlands to the Aegean Sea; their valleys provide routes that make it easier to reach the plateau.

LIVING IN MEDITERRANEAN ASIA

Israel, Lebanon, and Syria border the Mediterranean Sea. East of Israel is a country, which resembles the eastern part of Syria, called Jordan. We shall discuss all these countries together because they are much alike, though they have different governments. In this region are many of the places mentioned in the Bible.

A map of the eastern shores of the Mediterranean Sea.



Coastal lands and highlands. Along the coast of the Mediterranean, from Turkey to Egypt, there is a narrow coastal plain. Behind this plain rises a range of highlands. In Syria the highlands rise almost directly from the sea to high, rugged peaks, which are snow-covered in winter. The Syrians have terraced the slopes where there is enough soil. They grow olives, grapes, and figs there.

Farther south, in Israel, the highlands slope gently to the sea. The coastal plain is wider there, but it is drier too. Fertile soil has been washed down from the highlands, and streams from the highlands that cross the plain are used for irrigation. Farms are small and intensively cultivated. They would remind you of those in other Mediterranean lands. You would see vineyards, groves of olive and orange trees, patches of tobacco, and small fields of wheat and barley.

Many towns and small cities have grown up along the sea, even though the coastline is regular. Of these, Tel Aviv is the newest and one of the largest. It was made to order and was planned by the Jews as a model community. The concrete and glass buildings of Tel Aviv are very different from the buildings of Israel's older cities. It has a new artificial harbor, but only small vessels can use it. Large ships must anchor some distance from shore and transfer passengers and goods to or from smaller boats. The boats that ferry goods out to the ships are called *lighters*. Citrus fruits, which are Israel's biggest export, are shipped from Tel Aviv.

To the east, the highlands of Israel rise to a plateau almost three thousand feet above sea level. It is often called the Plateau of Judea. Streams have cut gorges through the edge of this plateau, and much of its soil has been washed away, leaving the surface rough, barren, and stony. In some places on the top of the plateau, however, there are small areas of level land.

Most of the people who live on these level lands are farmers or shepherds. As irrigation is extended, more land will be cultivated. The chief crops are olives, grapes, and figs. Winds from the Mediterranean give up moisture as they rise to climb to the Plateau of Judea, but there is not enough rainfall for forests to grow.

Find Jerusalem on the physical-political map. It is on the Plateau of Judea. Jerusalem was important in olden times because an ancient route that led from Egypt to Syria passed through Palestine. You can read about Jerusalem in the Bible. Nearby is the little town of Bethlehem, which is the place where Christ was born, almost 2000 years ago.



Ewing Galloway

This settlement in Israel has irrigated orchards and forest trees. Other irrigated areas can be seen beyond the stretches of desert.

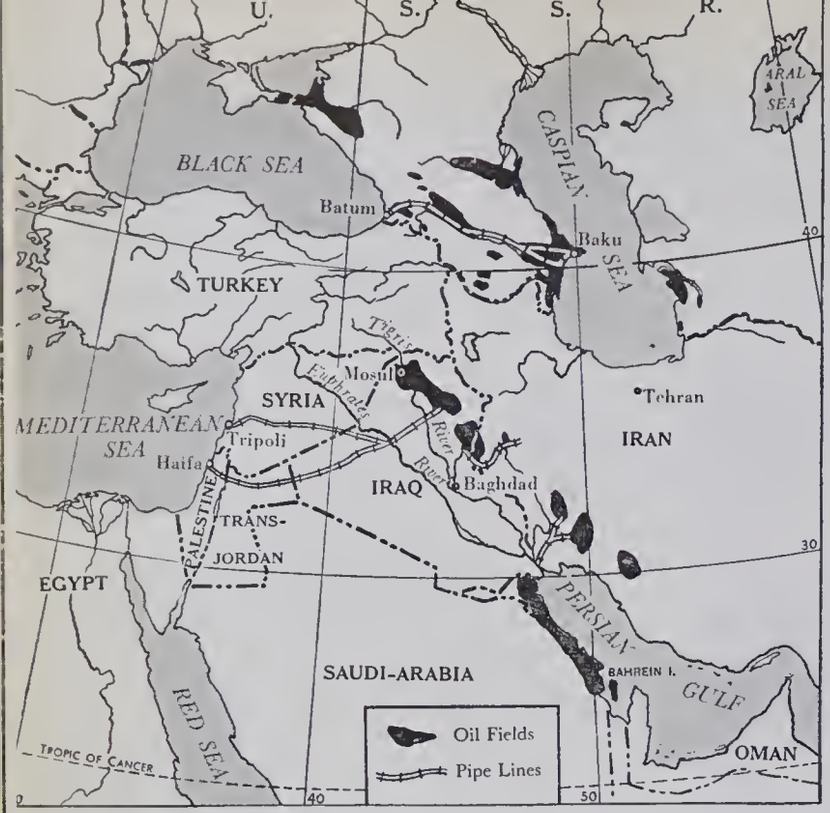
The central lowland. East of the coastal highlands is a central lowland. In this long, deep lowland are the Jordan River, the Sea of Galilee, and the Dead Sea. Find these bodies of water on the map. The long, straight valley of the Jordan is unusual in that most of it lies below sea level.

Streams flow into the Dead Sea, but none flow out. It does not overflow because the hot sun evaporates the extra water. The Dead Sea is five times saltier than the ocean because all streams carry a little salt into it. When the water evaporates, it leaves the salt behind. Fish cannot live in the salty water, and thus its name.

The chief occupation in the central lowlands today is grazing, just as it was in olden times, though small villages have grown up in the valley wherever the land is irrigated, and agricultural schools are trying to find crops suitable for this region. The Jordan River is already being used to generate electric power and to irrigate some of the dry fields of the Jordan Valley.

Eastern highlands. East of the mountains of Syria is a wide stretch of plateau, most of which lies in the Syrian Desert. In this area is Damascus, which you can find on the physical-political map on pages 198-199. Damascus stands at the edge of the desert but is surrounded by fields of grain, vineyards, orchards, and gardens. These are irrigated by a river that cuts through the mountains. Damascus from earliest times was the market of the desert. It was centuries old when Christ was born. Caravans crossing the desert have always headed for Damascus.

Jordan. East of Israel is the Kingdom of Jordan. It is larger than Israel or Lebanon, but most of it is very dry. The eastern part of the country extends far into the Syrian Desert. The western part is higher and receives more rain. Grain, vegetables, and fruit can be grown in this area. The population of Jordan is sparse. The people are Arabs, most of them nomads. Camels, sheep,



Map showing oil resources of southwestern Asia.

and goats graze on the scanty pastures. An effort is being made to irrigate more land.

ARABIAN LANDS AND PEOPLES

There are several different countries in the Arabian Peninsula. These include the kingdom of Saudi Arabia; the independent countries of Oman, Yemen, and Kuwait; and Aden, which is under the protection of Great Britain. Find these countries on the maps on pages 198-199 and 304-305.

Living on the Arabian Peninsula. You have seen that most of the vast area of the Arabian Peninsula has a light rainfall. Sometimes even this small amount does not fall. Desert rainfall cannot be depended upon. Sometimes very hard, sudden rains fall and valleys that have been dry for months, or even years, are filled with rushing streams. Grass grows quickly after such rains, but it soon dries up in the hot sunshine.

You have learned about the great desert in northern Africa. Arabia is an eastern part of that desert. However, not all of Arabia is bare rock and burning sand. The greater part of the country is a high and dry plateau, but most of the lowlands along the edges of the plateau have enough rain for grass to grow. Turn to the rainfall map on pages 8-9 and find out how much rain the lowlands receive.

Occupations of the Arabs. Most of the Arabs live in little villages in oases. They are farmers. However, there are other Arabs, called Bedouins, who wander through the desert lands of Arabia. The Bedouins find out where it has rained and go to those places so that their flocks can get grass and water. Sometimes they wander into the towns of the oases and trade animals and wool and skins and meat for wheat, knives, pots, and various other supplies.

Arabs keep camels and horses in addition to sheep and goats. The sulky camel carries heavy loads. Its hair is made into blankets, tents, and clothing. The Bedouins drink its milk and eat its meat. But the Arabs take greater pride in their fine horses.

The oases produce different kinds of foods. In the oasis near Medina, large quantities of excellent dates are grown. Some of the oases in the mountains produce honey and fruit. In other places, wheat and barley are raised. The mountain slopes of Yemen are noted for coffee. But the farmers of Arabia cannot supply all the food that is needed. More than half their food is imported. Exports are varied, but they amount to very little in world trade.

Since about 1940, when oil was discovered near the Persian Gulf, the government of Saudi Arabia has had a new source of income. The oil fields are being developed by foreign companies, for the Arabs have not enough money to drill the wells and build the pipelines. There is a picture of a well and pipeline on the opposite page. There are refineries on Bahrein Island, which you can see on the map on this page, and on the coast nearby. The map shows you where the important oil resources of southwestern Asia are located.

IRAQ — LAND OF TWO RIVERS

Iraq was once called Mesopotamia, a word that means "the land between the rivers." Nine out of every ten people in Iraq live in the fertile Tigris-Euphrates Valley. The rest of Iraq is dusty, parched desert land, brown and lifeless most of the year.

Changes in Iraq. Thousands of years ago, the ancient irrigation systems were destroyed or allowed to fall into disrepair, and the desert crept back into the fields and gardens of Mesopotamia. Modern irrigation dams and canals are now being built to provide again a good water supply at all seasons. Wheat, barley, rice, and cotton are raised. Three-fourths of the world's supply of dates come from Iraq.

Iraq's capital, Baghdad, has been a famous trading centre for centuries. The map on pages 198-199 shows on which of the two rivers it is located. This river is navigable for small steamships. Baghdad is becoming a modern city though it still contains bazaars and ancient mosques and minarets. Country people still bring fruit and grain and handwoven cloth to sell on market days. But where fine palaces and gardens once stood, there is now a railway station, and motor caravans travel on the old camel routes. Baghdad has also become a centre of airplane transportation.

Rich oil fields. Oil is the chief source of income for Iraq. Rich oil resources have been found in northern Iraq, near the city of Mosul. Foreign companies, chiefly from Great Britain, control the production and selling of oil from this region. These companies pay Iraq a certain sum of money each year for the use of the oil fields. Pipelines for transporting the oil have been laid from the oil fields to ports in Israel and Syria, as you can see on the map.

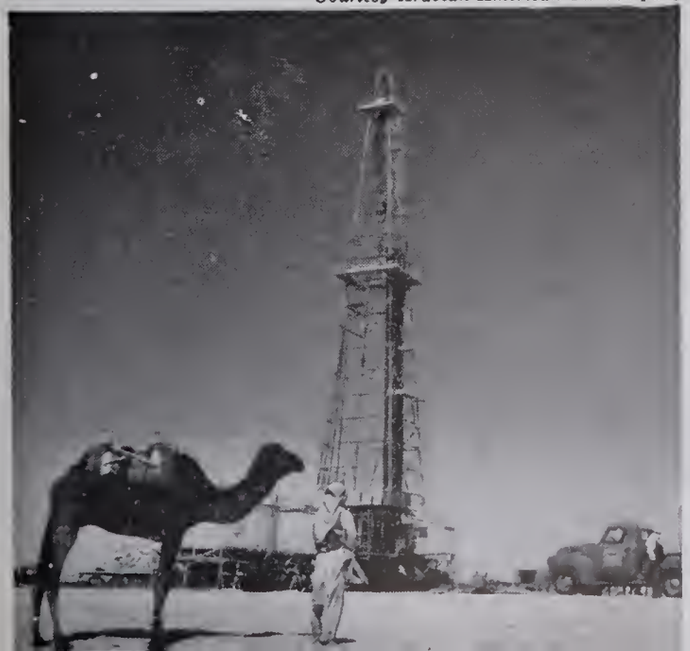
IRAN AND AFGHANISTAN

You can see on the physical-political map on pages 304-305 that the Soviet Union borders Iran and Afghanistan on the north, and that the high Hindu Kush separate most of Afghanistan from Pakistan. The lands and people of Afghanistan and Iran are much alike.

Nature of the region. These two countries cover a large area but have few people. Their surface is made up chiefly of a plateau, with mountains surrounding it and rising above it. Nearly all the rain comes during the winter, and the long and hot

An Arab stops to look at a drilling site in Saudi Arabia. The picture on the right shows an oil pipeline waiting to be lowered into a ditch.

Courtesy Arabian American Oil Company



Courtesy Shell Oil Company



summers are dry and windy. In some areas there are so few trees that people use them as landmarks. The largest area of nearly level land is in eastern Iran, but this is also the driest area.

Enough rain and snow fall on some of the high mountains to feed streams that flow down to the dry plateau. Towns and cities have grown up in the places where people can get water. In the oases there are lovely gardens and orchards. Cereals, cotton, and some vegetables are raised, and Iran has long been noted for its fine fruit. Mulberry trees grow in northern Iran, and silkworms supply raw material for weaving silk goods.

Transportation and trade. Though goods are still carried from place to place by caravan, methods of transportation in Iran and Afghanistan have improved. Automobile roads connect the largest cities and lead to the borders to join roads of other countries. One of the most important roads goes from Kabul, the capital of Afghanistan, through the Khyber Pass to Pakistan. You can find the Khyber Pass on the map on page 356.

Iran is one of the important oil-producing countries of the world. Its richest fields are near the border of Iraq, not far from the Persian Gulf. Afghanistan has oil deposits in the north and west. Oil is transported chiefly by pipelines which lead to the coast. It is by far the most important export of Iran, with oriental rugs next on the list.

Beautiful rugs are made on hand looms in small shops and homes. Sometimes they are called *oriental* rugs. Oriental means "eastern."

The chief exports of Afghanistan are wool and lambskins, used in making fur coats.

As you may suppose, the chief imports of all these countries are textiles and other kinds of manufactured goods.

A nomad encampment in Afghanistan. Camels, sheep, and cattle are grazing near the tents. Such camps can be found in great numbers all over the country.

Courtesy United Nations



THE GEOGRAPHY WORKSHOP

I. FLYING TO SOUTHWESTERN ASIA

Start your study of southwestern Asia by imagining you are a pilot ordered to fly to Tehran. Plot your course on a globe. How will you find the shortest route? If you fly at 450 miles an hour, how long will the trip take? Over what countries will you fly on your way to Tehran?

II. THE WORLD IN YOUR COMMUNITY

Perhaps southwestern Asia seems a very remote region to you. What contact has your community with these barren lands? Perhaps you will find more contacts than you expect.

Many tourists travel to Israel. If you can find someone who has been there, ask him to tell the class about his trip. Be ready to ask him questions about how he travelled, what the land looks like, the climate, the cities he saw, and the work the people were doing.

Although Canadians do not import a great variety of goods from southwestern Asia, a few things are sent to this continent. On your grocer's shelves you may find figs from Turkey or dates from Iraq.

Many people in Canada have oriental rugs from Turkey or Iran. These rugs are very valuable. Many Persian lambskins are imported to make coats. Perhaps your mother has a Persian lamb fur coat.

As you know, southwestern Asia was one of the regions in which civilization began. Either in this region or in Egypt lived the first farmers, herdsmen, potters, weavers, brickmakers, builders, and metalworkers. The plough, the wheel, glass, coined money, scales for weighing, and many other early inventions were made in this region. Perhaps you would like to prepare an exhibit of things we still use that were probably invented in southwestern Asia.

III. A PICTURE STUDY.

Why is southwestern Asia sparsely populated? Use the picture on this page as you discuss the answer. The photograph was taken near Jerusalem.

Jerusalem has become a fine modern city, but the use being made of the land in this picture has changed little in thousands of years. No better way has been found to use it. This might also be said of many thousands of square miles in southwestern Asia.

Discuss the following points as you talk about the picture:

1. What use is being made of the land?
2. In the crowded parts of Europe, a farm family may make a living on five or ten acres of land. Could that be done here? In the picture you should find evidence for three reasons why the land is not farmed.
3. How does the picture suggest difficulties in transportation?
4. Compare the picture with other pictures of southwestern Asia in this book. How does this picture differ from those that show farms and cities?
5. In what other parts of southwestern Asia might you find scenes resembling this?

Kostich Photo Service





THE SOVIET UNION

From central Europe eastward across Asia stretches a vast country. No other country is as large. Some people call it Russia, but actually Russia is only one part of what is officially known as the Union of Soviet Socialist Republics. Some people shorten this name to Soviet Union; others shorten it to the initials U.S.S.R.

The Soviet Union is a union of sixteen divisions called soviet republics. Each soviet republic has its own government and its own laws, but each republic must obey the national laws of the Soviet Union.

The vast Soviet Union. Just look at the territory covered by the Soviet Union! It spreads almost halfway around the globe – from the Baltic Sea to the Pacific Ocean. There is a great-circle distance of four thousand miles between Leningrad, on the Baltic Sea, and Vladivostok, on the Sea of Japan. From east to west the Soviet Union is almost twice as wide as Canada. Though it extends farther south than Canada, the distance from its southern to its northern border is about the same as that from Lake Erie to the north of Ellesmere Island. Size alone does not make a country great, but large countries are likely to have many advantages that small ones have not.

As you can easily imagine, there are many different types of land in a country

as large as the Soviet Union. There are great forests and rolling grasslands, high mountains and areas below sea level, stretches of frozen wasteland, deserts of sand, and stretches of wonderfully fertile soil. Naturally the people of the Soviet Union do not and cannot all live in the same way.

The region of the Soviet Union includes many different peoples, and there are striking differences among the groups. They range from nomadic hunters and trappers in the far north to people whose ancestors built cities and wrote books before Christ was born. One hundred and fifty languages are spoken in the Soviet Union. Look at the pictures in this section to find different types of land and different types of people.

WHAT WE CAN LEARN FROM MAPS

LOCATING THE SOVIET UNION

1. Take the outline map of Asia on which you have printed the names of the countries of southwestern Asia and add the name of the Soviet Union in the right place. Now color the area included in the Soviet Union.

2. Trace on a globe or a polar map the route that an airplane might follow in going from Vancouver to Moscow. Notice how near to the North Pole this route passes. Of course, you know that airplanes do not fly all the way on the route you have traced. They fly more to the south.

3. Turn to the world map on pages 2-3. Lay a sheet of paper straight across the map with the lower edge along the southern boundary of Canada. About how much of the Soviet Union is south of the Canadian border? Now place the paper along the same boundary so that you can see the whole of Canada. About how much of the Soviet Union is in the same latitude as Canada? From these map tests, would you say that most of the Soviet Union lies in the high latitudes, the low latitudes, or the middle latitudes?

LOWLANDS AND HIGHLANDS

1. You can see on the physical-political map that the Soviet Union has a very large lowland region and a very large and high mountain area. In what part of the country are the mountains located? The Soviet Union really faces west and north. The arrangement of high mountains makes travel easier in these directions than to the south and east.

2. Find the Ural Mountains on the map. This mountain range forms a low divide between the European and the Asiatic parts of the Soviet Union. Because the Urals are both low and narrow, they do not form serious barriers to travel. The Ural Mountains are most important for the minerals that are mined there.

3. Now find the Caucasus Mountains, between the Black and Caspian seas. This range of mountains is high. It forms almost a perfect wall. Is any part of the Soviet

These are Russians who live in the northern part of Russia. Their way of life is very different from that of the girl on page 331. The man is a trapper.

Courtesy The Society for Cultural Relations with the U.S.S.R.





Sovfoto

Cotton is grown in the southern part of the Soviet Union.

Union south of the Caucasus? What effect do you think these mountains may have on the temperature of the lands south of them? Look at the map on page 321 and decide what effect they have on the routes followed by the railways.

4. All along the southern edge of the Asiatic part of the Soviet Union there are high mountains. What countries share these mountain ranges? Notice that these mountains turn northward and extend along the eastern edge of the Soviet Union.

INLAND WATERWAYS

The many large rivers of the Soviet Union are divided into two groups, some flowing south and the others north.

1. Turn to the physical-political map on pages 304-305 and locate the Dnepr and Don rivers, both of which finally reach the Black Sea. Now find the Volga and Ural rivers, which flow into the Caspian Sea.

2. Find the region marked Siberia on the map. It is the part of the Russian Republic that is in Asia. Through Siberia flow the Ob, the Yenisey, and the Lena rivers. All flow into the Arctic Ocean.

Like the Mackenzie River in Canada, the rivers of Siberia are slow, and in the spring they overflow their banks. For about six months they are frozen, and in the spring the barriers of ice at their mouths act as dams, causing the streams to flood their valleys.

3. Follow the shoreline of the Caspian Sea. You will find that it has an irregular shoreline but no outlet. The Volga and Ural rivers which flow into this sea add a large volume of water day by day. Yet the sea does not overflow. Why not? Find the port of Baku. You can see by the map on page 321 that two railways connect Baku with ports on the Black Sea. What mountains are between these two railways? Find the Aral Sea. In what way does it resemble the Caspian Sea?

FOLLOWING THE COASTLINE

The Soviet Union has a long seacoast, but most of it is unsatisfactory for trade. Let us see whether the map will suggest some of the difficulties.

1. Let us first consider the west coast. What sea borders the Soviet Union on the northwest? Why is this body of water not very useful for transportation? Notice that the Soviet Union is almost completely surrounded by land.

2. What two seas help to form the southern boundary of the Soviet Union? Which of these two seas do you think would be most useful for commerce? Why? The Soviet Union has a number of ports on the Black Sea.

Do you see that the Black Sea route might easily be blocked by an unfriendly nation? Trace the route a ship would follow in going from Odessa to the Indian Ocean.

The Caspian Sea also has several ports. You have already found the port Baku. Now find Astrakhan. Baku sends petroleum northward by boat to Moscow. Trace the route these boats follow. Why is it an advantage to the people east of the Caspian Sea to have ports on the Caspian Sea.

3. Do you think the great width of the Soviet Union is an advantage or a disadvantage? Name a Canadian city that is about as far north as Vladivostok. Although Vladivostok is at the southern end of the Pacific coast of the Soviet Union, its harbor is often clogged with ice.

4. The Soviet Union's northern coastline is the longest. Is it regular or irregular? Most of the settlements along the Arctic Ocean are on rivers. How may the rivers serve these ports? Far to the west are the two most important ports, Murmansk and Arkhangelsk. Murmansk is an ice-free port. How may goods from Leningrad be shipped to Murmansk?

CLIMATE AND VEGETATION

Places that are far from the ocean have a continental climate because they have winds that have blown for a long time over land. Land is hotter in summer and colder in winter than the oceans are. The Soviet Union covers such a vast area that most of it has a continental climate, that is, warm or hot summers and cold winters. Because in central and northern Eurasia, the winds blow mostly from the west, even the Pacific coastal lands of the Soviet Union have a continental climate.

1. There is a great difference between summer and winter temperatures even north of the Arctic Circle. At Verkhoyansk, in the northern part of Siberia, the temperatures in January average 59° below zero, and temperatures of 90° below zero have been recorded. Is this place in high or low latitudes? Has it long or short days in January?

Flax being gathered into bundles on a collective farm. The plants are pulled out of the ground by the roots, and care is taken to keep the stalks straight and in bundles of even length.

Sovfoto



The July temperatures average 60°. Some July days have temperatures higher than 80°. How much difference is there between the average temperatures for January and July? Such great differences in temperature are typical of a continental climate in high latitudes. Have similar temperatures been recorded in northern Canada?

2. Most of the rain in the Soviet Union falls in summer. Turn to the map on pages 8-9 and notice how much rain falls in different parts of the Soviet Union. In general, does the rainfall increase or decrease from west to east across the country?

3. Look at the map on pages 12-13 and notice that the Soviet Union has four large vegetation belts. As in Canada, the one farthest north is the tundra. It is really a frozen desert. Is the greater part of it south or north of the Arctic Circle? Turn to the map on pages 8-9 to see how much rain falls in the tundra. In the north, even though the rainfall is light, the country does not look dry. Because of low temperatures, the water does not evaporate rapidly. The winters are so long and cold and the summers are so short that only the surface of the ground thaws. This keeps the water from soaking far down into the ground. The surface in summer is moist and in many places swampy. Now turn to the growing-season map. How long a growing season has the tundra?

4. Very gradually, the tundra merges into forest land. Bushes, dwarfed and misshapen by the harsh wind, are seen first. Clumps of bushes appear, and trees become more numerous. How much rainfall have the forest lands? In general, is the growing season long or short? Look again at the vegetation map and tell what type of forest is found in Siberia and the northern part of the Soviet Union in Europe. Has Canada a similar type of forest?

Now find two areas of broadleaf forest. Find these same areas on the rainfall and growing-season maps. You can see that the broadleaf forests are found where there is more rain and a longer growing season.

5. Find the grasslands on the vegetation map. In the north they are much like the southern part of our Prairie Provinces. Compare the growing season in these two areas. How long are they? Does the rainfall map show that rainfall in the grasslands increases or decreases from west to east? The grasslands of the Soviet Union are called *steppes*.

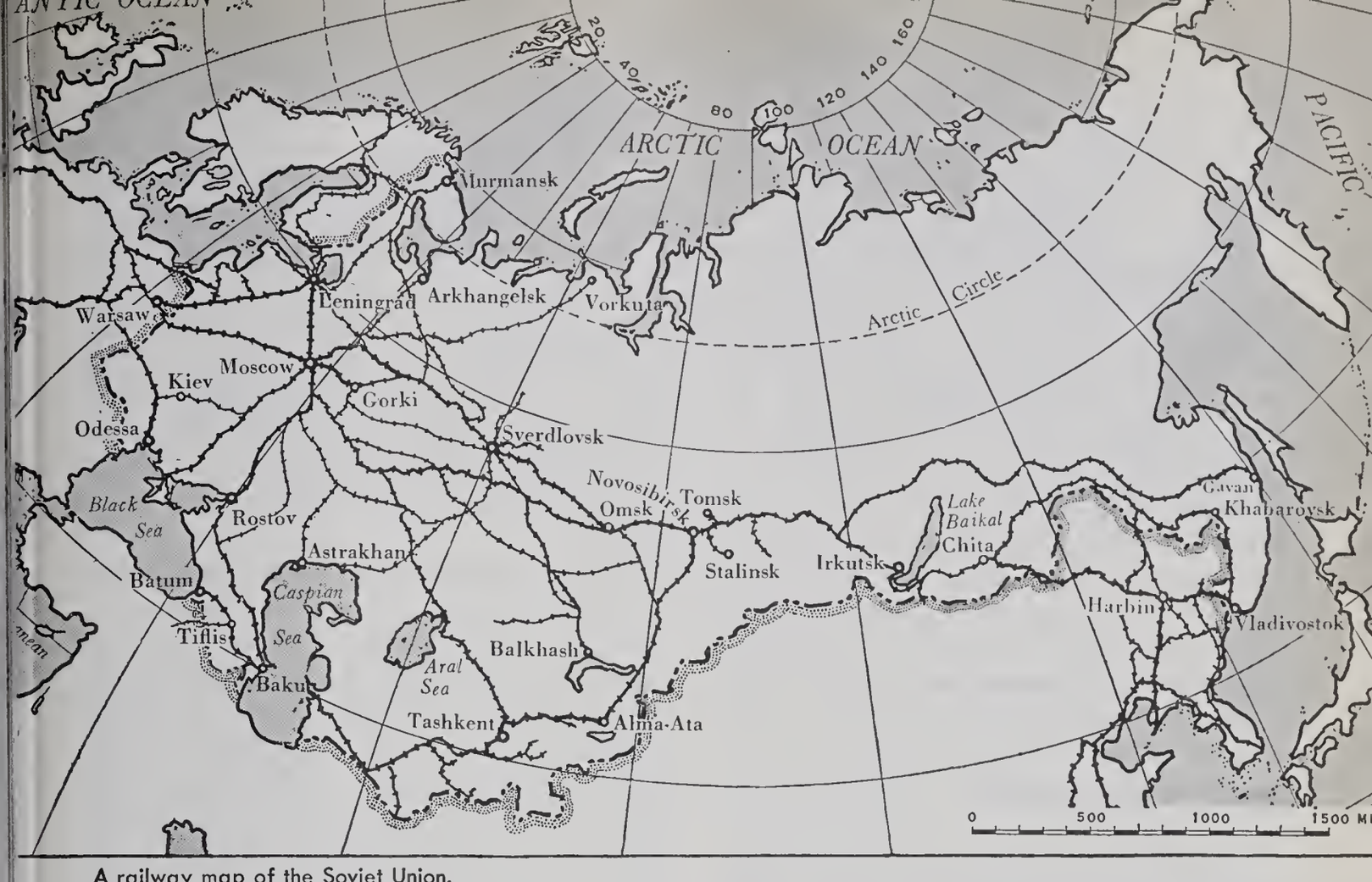
Find the place where the rainfall is between 40 and 60 inches. How is it located in relation to the Caucasus Mountains? At what latitude is this rainy place? Would you expect it to have mild or severely cold winters?

6. A great region of steppe extends all the way from the Caspian Sea to the boundary of China. Toward the south it becomes drier and drier. The grass finally fades out into the vegetation belt farthest to the south, the desert. Find this desert region on your vegetation map. It has a long growing season, but what does the rainfall map tell you about the amount of rain this region receives?

WHERE PEOPLE LIVE IN THE SOVIET UNION

1. You have learned that the Soviet Union is a very big country with a very large population. Notice on the map on pages 14-15 how densely populated the western part is. Does the densely populated area of industrial western Europe and central Europe extend into the Soviet Union? Gradually the population decreases from west to east. Let us see how the population pattern is related to certain other conditions in the country.

2. Look at the map on page 321 and find the part of the Soviet Union that has the densest network of railways. Do you see that this network thins out toward the east? You can see that two railways reach Omsk, and from that city a long railway line continues to the Pacific coast. This long line is



A railway map of the Soviet Union.

called the Trans-Siberian Railway. Now look again at the population map. Can you see that more people live along this railway than in the country north or south? Can you explain this fact?

3. Find on the population map three long strips of fairly dense population located in river valleys. Can you match the physical-political map with the population map to see what river valleys they are? Can you suggest two reasons why these valleys have more people than the regions beyond?

4. Find the large, densely populated region a little to the east of the Caspian Sea. This has become a very important mining and industrial region. Find it on the physical-political map. Is it also well supplied with railways?

FARM AND TIMBER LANDS

FARM ORGANIZATION

Soviet farmers neither own their land nor rent it, for all farm lands in the Soviet Union are owned and controlled by the government. Some of the farms are state farms; most are collective farms.

Most of the state farms have been developed on land that had not been cultivated before. They are used as models to show what can be done with machinery and with better farming methods. They are much like our experimental farms. They are even more necessary in Russia than here, because the Russian farmers were, and many still are, backward in their methods.

Each of the collective farms covers about a thousand acres and supports about seventy-five families. Perhaps it would be easier for you to understand what they are

if you were to think of them as co-operative farms. Instead of looking after only their own stretch of land and tending their own animals and farm buildings, the people on a collective farm combine their resources and labor. Each family has a house and a garden, and some families own goats, poultry, and perhaps a cow or two, but the rest of the property is worked jointly by the entire group.

The work is planned and directed by a chairman selected from the farmers. All workers are paid according to the amount and kind of work they do. Machinery, rented from government-owned machine and tractor stations, is used on most farms; both men and women are trained to use machines.

LIVING IN THE TUNDRA

The tundra of the Soviet Union is much like the tundra in Canada. The people in the tundra fish and hunt and trap animals. Some are nomadic herders who follow the reindeer from the Arctic Ocean to the fringe of the forest. Others lead a more settled life.

The Arctic Ocean is the great connecting waterway between the western and eastern parts of the Soviet Union, even though it is icebound for part of the year. You have seen that many rivers that have their beginnings in the southern part of the Soviet Union cross the tundra and empty into the ocean.

Igarka, on the Yenisey River, has become an important shipping port for lumber and for furs. It has lumber mills, which use the logs that are floated down the Yenisey. From Igarka the lumber is sent by the northern sea route to Murmansk, and from there it is shipped to European markets. Ships bring supplies to Igarka for the settlements up the river. The supplies are transferred to river boats, which take them south.

Transportation in the tundra is not well developed. In most places, the only means of travel is by the rivers. However, Murmansk, the most important port of the far north, is connected with Leningrad by railway. The warm current that keeps the harbors of Norway open in the winter also keeps this harbor open. It is the best Arctic port, but it is far away from the markets of the Soviet Union and is not used much when other ports are open. Arkhangelsk, on the White Sea, is the largest lumber-milling centre in the Soviet Union. It, too, has railway connections with other parts of the Soviet Union.

A tractor hauling logs to a lumber yard in one part of the northern cone-bearing forest of the Soviet Union.

Courtesy The Society for Cultural Relations with the U.S.S.R.



LIVING IN THE FOREST BELT

No other country has so large an area in forests as the Soviet Union. The vast cone-bearing forest south of the tundra is known as the *taiga*. Do you remember what the rainfall in the taiga is? In the forest, the cover of snow supplies moisture when it melts in the spring. For this reason, even though the rainfall is not heavy, there is enough moisture for the trees to grow. In the west there is a triangular-shaped area of broadleaf forest between the taiga and the grassland. Broadleaf trees also grow in the valley of the Amur River, in the eastern part of the Soviet Union.

The use of the taiga. The taiga is dark and gloomy and quiet. The valuable fur-





Maps showing where flax and sugar beets are grown in Europe.

bearing animals of the forests, such as ermines, foxes, and sables, are disturbed only now and then by hunters and trappers, who live in lonely little settlements along the streams. The hunters and trappers take their furs to trading posts in the spring. There, with the money they receive, they buy food, clothing, and other supplies.

Near the rivers there are clcared spots in the taiga. Lumbering accounts for many of them. Most of the lumbering is done near rivers that can be used for floating the logs to sawmills. Lumbering is carried on along the three great rivers, the Lena, the Ob, and the Yenisey.

The western forests. Western forests supply most of the timber used or sold by the Soviet Union. Transportation is not as big a problem there, and these forests are nearer to the markets. Many sawmills and pulp and paper mills are located in the northwestern part of the country. What ports in the tundra handle the forest products?

Some land there has been clcared for farming, but most of the farming in the Soviet Union is done in regions where the growing season is longer. The farmers of this forested area grow potatoes, oats, barley, rye, hemp, and flax. The Soviet Union is the world's leading producer of flax. The climate and soil are especially good for this plant, which is grown there for fibre. Study the map on this page to see where most of the flax is grown. What other flax regions have you studied?

In the taiga, as in our own forests, an effort is being made to control forest fires and to protect animals. Near many villages look-out towers rise above the trees.

The eastern forests. The forests along the Amur River, in the far eastern part of Siberia, can be reached more easily than can the eastern taiga. These forests supply hardwoods such as oak, maple, and walnut. China and Japan have been markets for wood products from there. Much of this lumber has been used in building new settlements in this region.

The Soviet government is trying to improve and increase agriculture in eastern Siberia, for that region cannot become important for industry until it has an adequate food supply. The region has a continental climate, but warm winds blow in from the Pacific during the summer. They bring enough moisture to give the southeastern part of the country a rainfall of more than 20 inches. The severe winter climate is a disadvantage. Sometimes the ground does not thaw until June. Barley and sugar beets as well as wheat, rye, and oats are raised.

LIVING IN THE GRASSLANDS AND DESERTS

As you have learned, the vast streteh of treeless plain south of the taiga is called the steppe. In the grassland, there is a region that contains some of the richest soil in the world. It is called the black-earth region. The map on page 325 shows where it is located and how large it is.

DENSELY POPULATED FARM LANDS

The best farm lands of the Soviet Union are found in the black-earth region west of the Urals. The Ukraine, a republic north of the Black Sea, is in this good farming region. It is only a small part of the country, but about one-fifth of all the people in the Soviet Union live in this fertile area. The Ukraine is a great wheat-growing region. It produces more than a quarter of the total wheat crop of the Soviet Union. Because the winters are so cold there, most Ukrainian farmers grow spring wheat.

The Ukraine produces many different crops. Among these are tobaeeo, flax, rye, sugar beets, cotton, and sunflowers. Turn back to the map on page 323 to see where most of the sugar beets are grown. The Soviet Union leads the world in the production of sugar beets. Flax and sunflowers are cultivated chiefly for their seeds. Sunflower seeds make excellent feed for poultry and pigs. When crushed, they yield an oil that can be used in cooking. The oil cake that is left after the oil is pressed out is a nourishing feed for livestock.

The farm lands of the Ukraine are well supplied with transportation. This densely populated section has a thick network of roads and railways. Rivers as well as railways carry wheat and other products to ports on the Blaek Sea. One of the leading grain-shipping ports is Odessa.

Two large inland cities of the Ukraine that owe their growth partly to agriculture are Kiev and Kharkov. Both Kiev and Kharkov have factories that use raw materials supplied by the farms of nearby regions. Among the products of these factories are flour, beet sugar, leather, and textiles. Kiev and Kharkov arc also noted for heavy manufactures, many of which supply machinery and tools for farms.

A combine is harvesting barley on a collective farm in the Ukraine. Does this picture remind you of any region of Canada?

Courtesy The Society for Cultural Relations with the U.S.S.R.



SIBERIAN FARM LANDS

Look at the map on this page to see how far the black-earth region extends into Siberia. Wheat, oats, and rye are grown on this fertile land. It is also the most densely populated part of Siberia, as you can see on the map on pages 14-15. When the Trans-Siberian Railway was built around the turn of the last century, many people moved into Siberia. Before then, of course, farmers who lived in Siberia could not market their crops. The Trans-Siberian Railway has been to Siberia what the Canadian Pacific Railway has been to the Canadian west.



Map of the black-earth region of the Soviet Union.

Western Siberia requires supplies of many kinds. Two large cities have grown up in this farm belt. They are Omsk and Novosibirsk. By comparing the maps on pages 321 and 304-305 you can see that Omsk is at the place where the Trans-Siberian Railway crosses the Irtysh River. Novosibirsk grew up where the railway crosses the Ob River. Boats bring products to railway stations for shipment, and then return with supplies from the cities.

DRY LANDS AND OASIS CROPS

Turn to the physical-political map and find the large area of land that lies between the Caspian Sea and the western boundary of China. It is sometimes called Turkestan. The vegetation map shows that it has only desert vegetation. The eastern part of the region, called the Kirghiz Steppe, is a broad plain covered with short, scanty grass. Nomadic tribes wander over the vast steppe in search of pasture. In summer, they migrate to the mountains, but in winter they return to the plains.

In some places, rivers from the mountains of central Asia supply water for irrigating the land. As a result, oases are found near the foothills of the mountains. A number of towns and cities have grown up at oases. The cities include Bukhara, Tashkent, Samarkand, and Stalinabad. Locate them on the maps. They show you where the irrigated farm lands are.

Today, cotton is the chief crop of these irrigated farm lands. Other crops raised there include wheat, barley, sugar beets, rice, and fruit. For a long time, these rich desert oases have been famous for their orchards and vineyards. The dry air and the abundance of sunshine increase the sugar content, not only of sugar beets, but also of grapes, melons, and apricots. Because of their high sugar content and solid pulp, many of these grapes are dried for raisins. Mulberry trees growing along the streams

These sheep are grazing on the Kirghiz Steppe.

Sovfoto



produce heavy crops of leaves, which are fed to silkworms. Formerly silk and cotton were shipped from there to the textile mills of Moscow. Now, much of the cotton and silk is woven in the mills of the oasis towns themselves.

INDUSTRIES AND RESOURCES

SOURCES OF POWER

The Soviet Union has abundant power resources. To make full industrial production possible every kind of power has been developed.

Scattered coal fields. Turn back to page 203 to see how the Soviet Union ranks as a coal-producing country. In the west, coal of the best quality comes from the Donets Basin, north of the Sea of Azov. Lignite and *peat* are found near Moscow and Leningrad and are being used in those cities in increasing amounts. Peat is burned in Leningrad for making electricity.

In western Siberia, south of the Trans-Siberian Railway, is the large Kuznetsk coal field, with thick beds of excellent coking coal. Factories have been built there to take advantage of this coal supply.

The development of electric power. Electric power has been developed on a large scale in the Soviet Union. One of the large hydro-electric plants was built at a dam on the Dnepr River near the city of Dnepropetrovsk. Others of this type, though not so large, are located in the Caucasus region and in the far north at Murmansk as well as on the rivers in the central and eastern parts of the Soviet Union. There is a picture of one of these dams on page 327.

Electric power is also produced by burning fuels. Peat, low-grade coal, and coal of good quality are among the fuels used. These power plants are widely distributed, though most of them are in the industrial area.

Sources of oil. Oil resources are very important to the Soviet Union. The map on page 329 will show you that the chief oil-producing area lies between the Black and Caspian seas on both sides of the Caucasus. This region is not far from the oil fields of southwestern Asia. The largest yield of oil is from the wells of the small peninsula near Baku. From Baku two pipelines run to Batum, on the Black Sea. Oil is shipped by tank steamers to Astrakhan on the Caspian Sea. From there it is shipped north on the Volga River to many different refineries.

Oil fields are located in other parts of the Soviet Union, too, particularly north of the Caspian Sea and in the Ural Mountains region. Oil production in the Soviet Union is large but little is exported because the Russians can use all the oil themselves.

PRODUCING RAW MATERIALS

Every part of the Soviet Union contributes to the industrial development of the country as a whole by producing raw materials. Factories are located near the raw materials or near the sources of power. The map on page 329 tells you what minerals are mined in the Soviet Union. It also shows that almost every part of the country has mines. As you know, iron ore is very important for the industrial development of a country. Turn again to the diagram on page 203. About how many tons of iron ore does the Soviet Union produce in a year?

The richest known deposits of iron ore in the Soviet Union are in the southern Ukraine, near the Dnepr River. At Magnitogorsk, near the southern end of the Urals, iron is mined on a large scale. Magnetic



Sovfoto

This hydro-electric plant in the rugged Caucusus Mountains supplies power to factories in distant regions.

Mountain, from which the ore is taken, is said to be composed largely of iron ore.

Other iron mines are located near the southern boundary of Siberia in the Kuznetsk Basin, near Lake Baikal, and in the valley of the Amur River. There is a promising undeveloped field north of Kharkov.

Some other minerals are needed in the manufacture of special kinds of steel. These minerals are chromium, manganese, and tungsten. Their locations are shown on the map of minerals. What other useful ores are mined? Where is the greatest variety of ores found?

Vast supplies of raw materials are also obtained from the farms and forests of the Soviet Union. Lumbering provides work for a great many people. Sugar beets and potatoes are used in the Soviet Union as they are in central Europe. Cotton, flax, hemp, wool, and silk are supplied to textile mills. Hides, which are *by-products* of meat packing, are sent to tanneries. This is not a complete list.

INDUSTRIAL CENTRES

The Moscow industrial region. Moscow is the centre of the most highly industrialized section of the Soviet Union. It is the capital, not only of the Russian Republic, but of the entire Union of Soviet Socialist Republics as well. The population map, pages 14-15, shows that Moscow is in the most densely populated part of the Soviet Union. The physical-political map and the railway map suggest several advantages that Moscow, one of the largest cities in Europe, has. It is the biggest railway junction in the country, and canals and rivers connect the city with the Baltic Sea, the White Sea, and the Caspian Sea. Some of the smaller rivers and the canals are not marked on the map.

Large river boats can come into the centre of Moscow. Just north of the city is a canal that connects the Moscow River with the Volga River. This is an important canal, for it connects Moscow with the

country's busiest waterway. A large reservoir was made when this canal was constructed. It is sometimes called the "Sea of Moscow." This reservoir provides an abundant water supply for the city. The hydro-electric plant, which was built at the dam, furnishes the electric power used in Moscow and the surrounding cities.

By means of these far-reaching transportation facilities, many different kinds of raw materials are brought into the Moscow region and the manufactured articles distributed to market areas. The first factories to be built in Moscow were textile mills, but now there are factories of all types.

Not all of the manufacturing in the Moscow industrial region is done in the city of Moscow. There are many other manufacturing cities nearby.

The Leningrad industrial region. Not quite two hundred and fifty years ago, Peter the Great, a Russian czar, decided that he wanted a "window" through which he could make contact with Europe. He chose a small strip of newly conquered land on the Gulf of Finland to serve as his window; there he built a city that rivalled the beautiful European cities he had visited. Today it is the chief western port of the Soviet Union.

Turn to the world map and notice that Leningrad is a little farther north than Churchill, Manitoba. No other large city with a population as great as that of Leningrad is so far north. During the winter the harbor freezes and ice-breakers are kept busy ploughing through the ice to keep the channels open for ships.

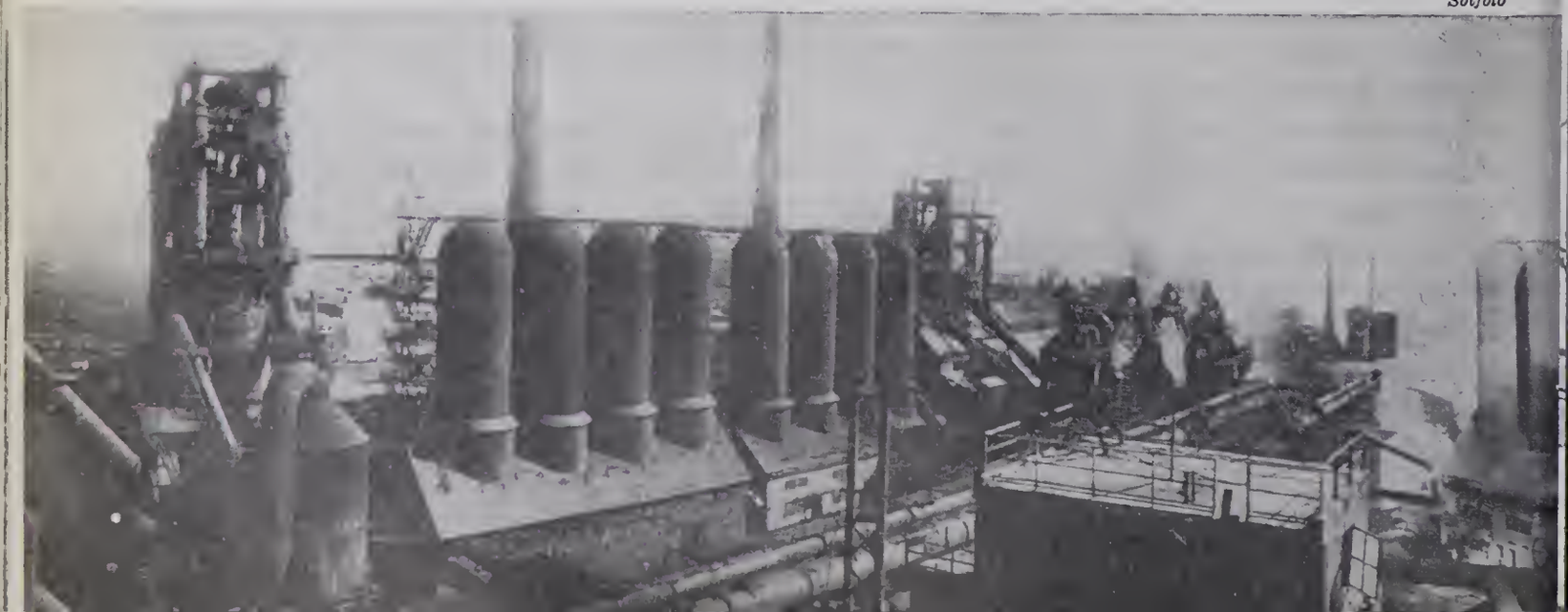
In spite of many disadvantages, Leningrad has grown. Canals connect its harbor with Lake Ladoga and with Lake Onega, with the White Sea, and with the Volga River. This is one of the most important industrial regions in the Soviet Union. The factories make electrical machinery, paper, cellulose, chemicals, and textiles. Power is obtained from hydro-electric stations nearby and from fuel sent from the Moscow area, the Donets Basin, and the Caucasus oil field.

Eastern industrial areas. There is an important industrial region in the Ural Mountains. Look again at the map on page 329 to see what minerals are mined in this region. The Ural area is well to the east of the most densely populated lands of the country, and neither the Ural Mountains nor the surrounding countryside is well supplied with coal, but good railways connect this region with the other parts of the Soviet Union.

Farther east, in the Kuznetsk Basin, are rich deposits of high-grade coal. From these Kuznetsk deposits, about fourteen hundred

This large steel mill was built in the Ural Mountains at Magnitogorsk where the iron is mined.

Sotfoto



miles away, the Ural area now gets coal for its iron and steel mills and machine shops. As a result, Magnitogorsk, Sverdlovsk, and several other cities in the Ural area have become large manufacturing centres.

Now, look at the Kuznetsk Basin. It has rich coal deposits, but it has only small supplies of iron and other metals. The trains that haul coal to the Urals return to the Kuznetsk Basin with loads of iron, platinum, chromium, and nickel. As a result, the Kuznetsk Basin, too, has become a great industrial region. Novosibirsk, Stalinsk, and other cities nearby have become important manufacturing centres. The same kinds of steel mills have been built at each end of the connecting railway line.

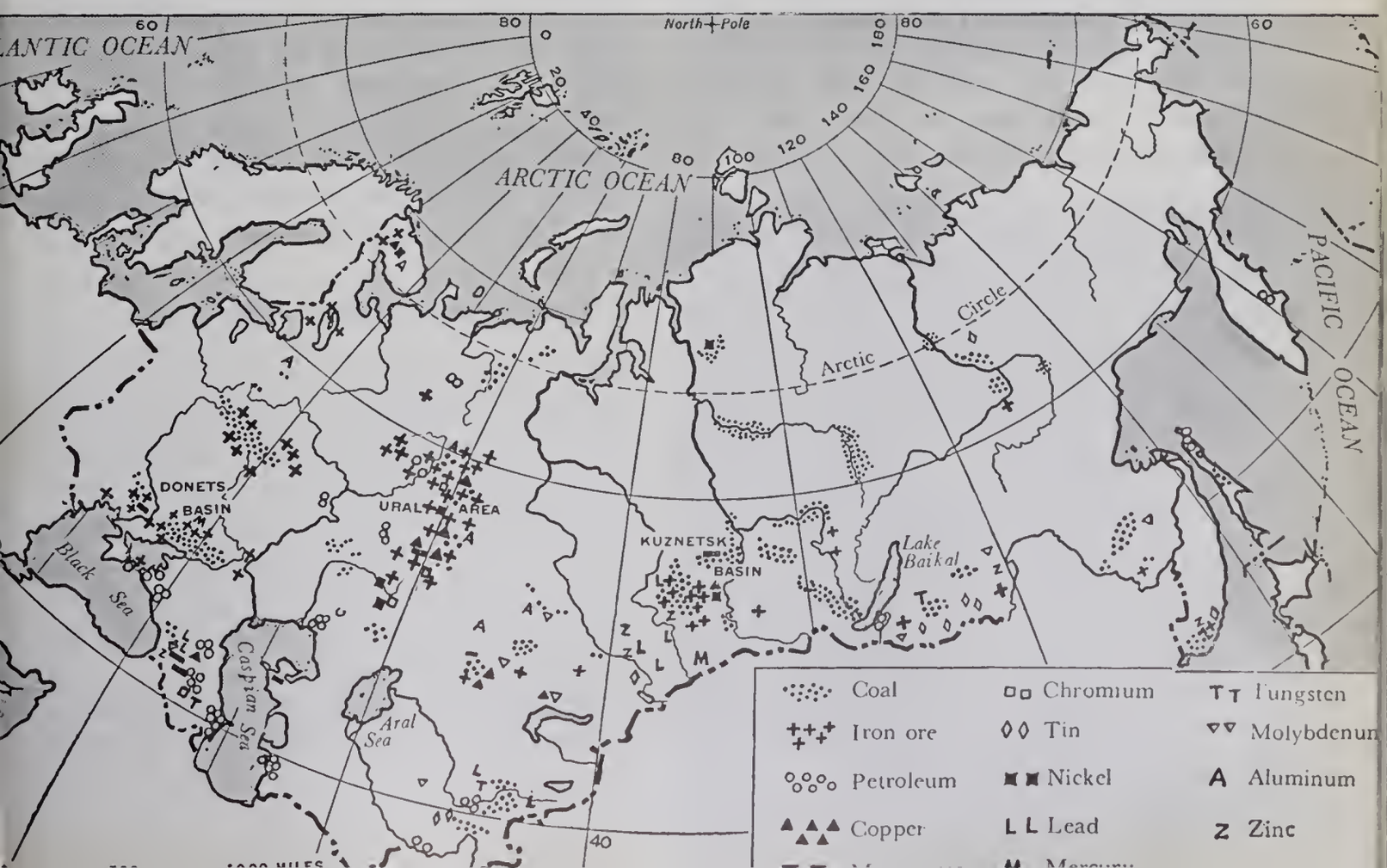
Iron deposits have recently been found south of the Kuznetsk Basin. Now less iron is being hauled from the distant Urals.

In the region of Lake Baikal and along the Amur River are steel mills. South of the Caucasus Mountains and far to the north there are other mills. Thus the widely separated market regions are supplied by factories that are near at hand.

TRANSPORTATION AND TRADE

In a modern industrial country, the transportation system is very important. Raw materials and power must be brought together. Food must be sent to cities, factory products must be distributed. Because the Soviet Union is so big and because the centres of population are so widely separated, transportation is a more serious problem there than in most countries. Providing adequate transportation is a serious problem in Canada, but it is even more of a problem in the Soviet Union. In general, the

A map showing where minerals are found in the Soviet Union.



highway system in the Soviet Union is poor. Railways are of first importance. Rivers and canals are second.

TRANSPORTATION BY RAIL

Railways have many advantages over other forms of transportation. Heavy and bulky loads can be moved on them at all seasons. In a fairly level country, railways are built in almost straight lines. Those that have two tracks can take care of many trains, and the trains can make good time. The Trans-Siberian Railway has two tracks, and trains cross the country, from Leningrad to Vladivostok, in about nine days. With the growth of industry, transportation of all kinds has been improved.

The map on page 321 will show you where the chief railways are. The network is densest in the west, with Moscow at the centre. You can see that the railways extend to the leading ports, to the mining regions, to the best developed agricultural areas, and through some of the forests. Study the map to see how the various regions about whieh you have read are connected. Name at least one product that you think would be earried on each railway line. Which lines do you think are used to take cotton to Moscow? Trace this map, then write the name of a product carried on each line.

WATER TRANSPORTATION

You have already seen that there are many large rivers in the Soviet Union. Canals now eonneet many of the tributaries of the main rivers. The canals are used chiefly for moving heavy, bulky materials such as grain, timber, coal, ore, and oil. Sometimes such freight is shipped the entire distance by river; sometimes it is sent by water to a railway crossing and then shipped by rail. On page 325, you read about the importance of railways and waterways to Omsk and Novosibirsk. Many towns along the Trans-Siberian Railway have developed where the railway crosses a river. Use the physical-political map to find examples of such locations.

Mother Volga. The Volga is the river of greatest importance to the Soviet Union. The people affectionately call it "Mother Volga" because it has been so helpful. It is even longer than the Danube, and its numerous tributaries flow through the most densely populated sections of the Soviet Union. For thousands of miles these waters are navigable. Down the rivers float great quantities of timber from northern forest lands to the treeless areas of the south. Moving upstream are boats loaded with grain from Ukrainian farms, coal from the Donetz Basin, and oil from the shores of the Caspian Sea.

USING AIR TRANSPORTATION

The people of the Soviet Union, like our own people, are making great progress in opening up their country by air. Air lines link Moseow with all parts of the Soviet Union. It is possible to fly from Moscow to the shores of the Bering Sea, 4500 miles away. If you were to fly this route, you might make landings at Arkhangelsk and Igarka and finally on the shores of the peninsula just across the Bering Sea from Alaska. Turn to the physical-political map and trace this air route.

INTERNAL AND FOREIGN TRADE

Most of the trade of the Soviet Union is internal; it is carried on within the eountry itself. The different regions and republics exchange the materials they have for those they need. The country is so large and has such a variety of crops, natural resources, and manufactured articles that it is not so dependent upon foreign lands for supplies as are many other countries.

The Soviet Union has an important place in the timber trade of the world. Its forests

are large. With the increase in the number of sawmills, more lumber, plywood, and wood pulp are being manufactured. Before World War II, petroleum products, metals, machinery, chemicals, and coal were the important exports. Almost all the trade in these products was with European countries.

As the Soviet Union has developed its industries, fewer things have had to be imported. The imports include machine tools, a variety of metals, electrical equipment, wool, and rubber.

The Soviet Union has many ports, but not one is entirely satisfactory. You know that many seaports of the Soviet Union are far to the north. They are inconveniently located in relation to world trade routes. Ports on the Baltic and Black seas are nearer great trade routes, but they also have a drawback. Both of these seas may easily be closed to the Soviet Union by another nation. Russia has tried for many hundreds of years to gain free ports near trade routes. It has done this both by war and by peaceful means.

THE GEOGRAPHY WORKSHOP

I. NATURAL ENVIRONMENT

Draw a large map of that part of the world that lies north of 35° north latitude. On it mark the North Pole, the Arctic Circle, the Arctic Ocean, Canada, and the Soviet Union. Color the following vegetation regions: the tundra, the cone-bearing forests, the broadleaf forests, the grasslands, and the deserts. Use the maps on pages 12-13 to locate these regions. Use a different color for each region.

What vegetation regions are located in both Canada and the Soviet Union? It is interesting to note that Canada and the Soviet Union together contain a very large share of the world's cone-bearing forests.

If you compare the exploration and development of Russia and Canada, you will note that Russia developed largely from west to east and that Canada grew from east to west. In both countries the explorers were fur traders. Following the fur traders came the farmers. Last of all came the industrial workers.

In both countries today the frontier is in the north. That is the direction in which pioneer settlers are moving. As both nations move northward, their people come closer together. Explain how improvements in methods of travel are bringing the two countries nearer together.

II. THE WORLD IN YOUR OWN COMMUNITY

If you were to fly from your home northward to the North Pole and then continue southward along the same line of flight what country would you reach first, after you had crossed the pole? Would this be the country that you would reach from all parts

This girl is picking apples in a region near Lake Balkhash.

Courtesy The Society for Cultural Relations with the U.S.S.R.





Courtesy The Society for Cultural Relations with the U.S.S.R.

The Kremlin from the Moscow River. The Kremlin is the headquarters for the government of the Soviet Union.

of Canada? Use a globe for answering this question.

What part of the Soviet Union is nearest your home by great-cirele distanee? How far away is it? How far from your home are Moseow and Vladivostok? Find other plaees in the world that are about the same distanees from your home.

Canada does not get a great deal from the Soviet Union, because the two eountries are mueh alike, and what Russia produees Canada also produees. Northern Russia, like northern Canada, eonsists mainly of hard roeks, many of whieh are veined with gold, silver, platinum, niekel, lead, or zine. Both countries are eovered from west to east by a great mantle of cone-bearing forests. They both have grasslands, which are famous for their golden harvests of wheat and their cattle and sheep.

You know what is produeed in your own eommunity. Use the maps in this book to find out what things are produeed in the Soviet region that are similar to the things produeed in your own home region. Suppose, for example, you live in a region of broadleaf forest with a rainfall of between 20 and 40 inehes and a growing season of four to six months. You find a similar region in the western part of the Soviet Union. The map on page 244 tells you that rye produetion is heavy in this region. Do the farmers of your home region produee mueh rye? Thus you ean go on eomparing erop after erop. To find all the produet maps, look under "Maps" in the Index at the baek of this book.

If you have an opportunity, listen to musie by the great Russian eomposers, Tehaikovsky, Borodin, Rimski-Korsakov, and Shostakovich. You have probably heard musie by all of them on the radio or on reeords.

III. SOVIET UNION IN THE NEWS

In your newspapers you will find many artieles with a Moseow date line. You will also find articles in newspapers and magazines about various parts of the country,

about crops and industries, or about new railways and power projects. Look especially for information indicating that the country is becoming more highly industrialized.

IV. COULD THIS BE IN THE SOVIET UNION?

Imagine you have five pictures showing the scenes described below. How many of them could have been taken in the Soviet Union? When you decide that a picture belongs in the Soviet Union, decide also in which of the four large regions it is most likely to have been taken.

1. A huge wheat field stretches away over gently rolling hills. A combine, pulled by a tractor, is at work harvesting the grain.
2. A hilly stretch of dry-looking grass. A shepherd is watching a large flock of sheep.
3. A cotton field with irrigation ditches running through it.
4. Lumbermen working in a thick forest of cone-bearing trees.
5. A man watching a herd of reindeer. The ground is thinly covered with snow, and the man is wearing fur clothing.

V. SOVIET SEAPORTS

The seaports of the Soviet Union are not entirely satisfactory for world trade. Match each port in the list with the correct reason why it is unsatisfactory.

Murmansk	Vladivostok
Baku	Odessa
Leningrad	

1. The port is on a long gulf that opens off a narrow sea. Ships from there must make a long journey to reach the busy Atlantic trade routes. The harbor freezes over in winter.
2. The port is on a sea that is entirely surrounded by land.
3. The port can be reached only by a route far to the north. Although the harbor does not freeze, a ship must go through cold, stormy, dangerous waters to reach it. It is hundreds of miles by rail from the densely populated parts of the country.
4. The port is several thousand miles by railway from the densely populated industrial regions of the country.
5. The port is a long way from the open ocean. To reach it from the Atlantic a ship must travel through three large seas, one small sea, and three straits.

Novosibirsk is located midway between Moscow and Vladivostok. Notice the long railway bridge that crosses the Ob River in the background at the right. The river is covered with great cakes of ice.

Sovfoto





EASTERN ASIA

Most of the early traders and explorers who visited eastern Asia came from the lands in the western part of Eurasia. The overland routes that they followed to the *Far East* were long and dangerous. They led over windy deserts, through high mountain ranges, and across desolate plateaus. But silks and teas and other luxuries lured many caravans of traders to the East. In China, they found a civilization older than their own. Since those early days, some parts of eastern Asia have changed little. Other parts have adopted ideas and ways of living from western countries.

The people of eastern Asia. Parts of eastern Asia are very densely populated. China is about as large as Canada, but has more than thirty times as many people. Most of China is mountainous, so the people are crowded together on the lands that they can farm. It is hard for us to imagine just how crowded they are.

In densely populated European lands and in some parts of eastern Asia, work in mines and factories makes people less dependent upon the land. Where this is so, more of the comforts of everyday living are possible for the masses of the people. Japan is a very densely populated country, but the Japanese are not so dependent upon farming as the Chinese, for they follow many occupations. However, the amount of manufacturing done in China is increasing rapidly.

WHAT WE CAN LEARN FROM MAPS

LOCATING THE COUNTRIES OF EASTERN ASIA

1. Find China on the physical-political map on pages 304-305. It extends westward from the Pacific to the centre of Asia. The name "China" is usually used to refer to the southeastern part of this large country. Look at the map on pages 304-305 and find the regions labelled Inner Mongolia, Sinkiang, and Tibet. Their boundary lines are not clearly shown, but these three regions are provinces of China. They are referred to as Outer China. Another province, called Manchuria, is northeast of China.

Print the names China, Manchuria, Inner Mongolia, Sinkiang, and Tibet on your outline map of Asia.

2. North of the province of Inner Mongolia is the independent country of Mongolia. Print its name on your outline map.

3. Find Japan on the physical-political map. How does it compare in size with China? Japan includes four large islands: Hokkaido, Honshu, Shikoku, and Kyushu. Which island is the largest? Print the name Japan in the right place on your outline map.

4. Find the large peninsula that extends from Manchuria between China and Japan. What is its name? What seas are on either side of it? How far is Korea from Japan? Add the name Korea to your outline map.

5. Now color the portion of the outline map that includes all the foregoing countries and provinces. Notice how far eastern Asia is from the countries of Europe.

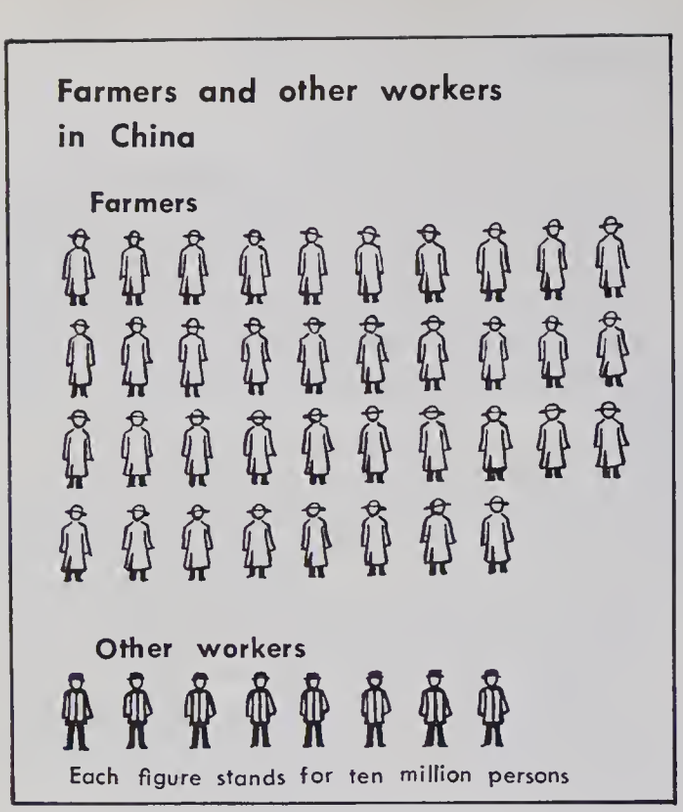
RIVERS AND MOUNTAINS

1. On the physical-political map find the altitude of lands in eastern Asia. Notice that

This is part of Chungking as it looks from an airplane. The small piece of flat land in the river is an airfield. Notice how every bit of land between the mountains and the shore is crowded with buildings.

Alexanderson (CNS) from Paul Guillumette, Inc.





most of the land is high. Where are the highest lands? Where are the areas of lowland in China? Is there much lowland in the interior of China? in Korea? in Japan?

2. In northern China the Chinese name for river is "ho." In southern China it is "kiang." In this book you will find the Chinese name the first time a river is mentioned. After that the word river will be used. China has three rivers that have a great influence on the lives of the people who live near them. Look at each of these rivers on the map on page 340.

3. The Hwang Ho is in North China. Find its source in the Plateau of Tibet. Trace its course eastward to the Yellow Sea.

4. The Yangtze Kiang is the most used river of China. The Yangtze River and most of its tributaries are navigable for great distances. China's largest port, Shanghai, is near its mouth. The Yangtze River is navigable for large ocean freighters as far as Hankow. This city is about 700 miles up the river.

5. Farther south is the short but navigable Si Kiang. Locate Canton, the large city near its mouth. Also locate the British colony, Hong Kong. It is a short distance southeast of Canton.

6. Japan has many short, swift rivers. Of what use can such rivers be?

CLIMATE AND VEGETATION

To answer the following questions, use any maps that will help you.

1. What parts of eastern Asia have more than 60 inches of rainfall a year? How does the amount of rainfall in China change from southeast to northwest? What part of Japan has the heaviest rainfall?

2. Most of the rainfall of eastern Asia comes in the summer. At that time the winds blow from the Pacific Ocean. From what direction do they blow? In winter the winds are from the west and northwest. Why do these winds bring less rain?

3. On the map on pages 10-11 find the valley of the Hwang River. How does the growing season in the valley of the Hwang change from west to east? How long is the growing season near the mouth of the river?

4. How long is the growing season in most of the Yangtze Valley?

5. Do you remember where the Si River is located? How long is the growing season in the Si Valley?

6. Find Manchuria on the growing-season map. What part of Canada has a growing season of the same length?

7. Follow the Tropic of Cancer across China on the physical-political map. What kind of natural vegetation would you expect to find in parts of southern China where the land is not used for farming? Check your answer on the vegetation map on pages 12-13. What kinds of vegetation do you find along the Yangtze River? Are most of the broadleaf forests in highland or in lowland regions?

WHERE THE PEOPLE LIVE

Look at the map on pages 14-15. Notice that some areas are very densely populated

and others very sparsely settled. What parts of Asia are most densely settled? Are most of the densely settled areas highlands or lowlands? Where do the fewest people live? Do these lands have much rain? Compare the lengths of the growing seasons in the highlands and in the lowlands.

What two reasons can you give why so few people live in Mongolia and Tibet? What reason can you give why so few people live in Sinkiang?

CHINA—A LAND OF FARMERS

China is the second-largest country in the world. China proper is divided into two regions, South China and North China. It is a land of farmers. The graph on page 336 tells how many farmers there are. Because much of China is too dry or mountainous for farming, the lands suitable for farming are very crowded. The average farm contains only about four acres. The Chinese are able to make a bare living from their farms by raising several crops every year and by working very hard on their land.

Ways of living in South China differ from those in North China, because the natural environments are different. You will find the differences later. Most of the boundary between South China and North China follows the Tsinling Shan. "Shan" is the Chinese word for mountain range. The Tsinling Shan separates the valley of the Hwang Ho from the Yangtze Kiang.

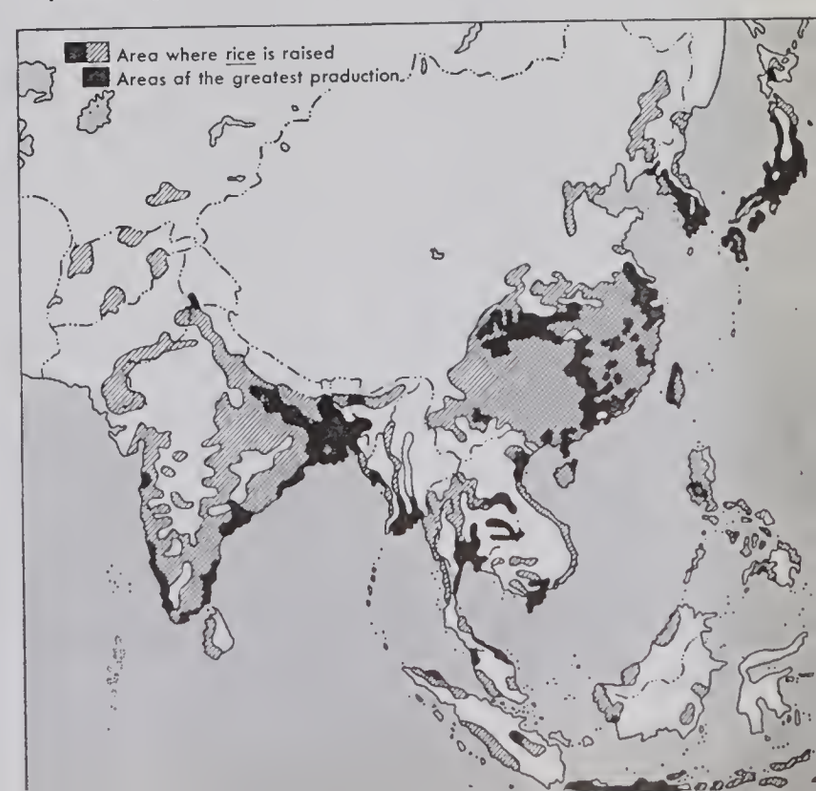
Intensive farming. Only by very intensive farming can a Chinese farmer and his family make a living. As much land as possible must be cultivated. To save space, the farmers get along without fences, roads, pastures, and barnyards. Much of the lowland is irrigated, and many of the hillsides are terraced.

Chinese farmers raise two or even three crops on the same land each year. In South China, where the growing season is long, a late crop of rice may be planted between the rows of an early crop that is almost ready for harvest. This can be done because all the sowing and reaping is done by hand. The early crop is harvested in July and the late crop in October or November. A crop of vegetables may be grown after this.

In North China, where the growing season is much shorter, cotton is grown in the summer and wheat in the winter. In order that the cotton may have enough time to grow, the cotton seeds are planted between the rows of wheat before the wheat is ready for harvest. Growing two crops in the same field in this way is called *interculture*. Such farming is possible only when hand tools are used and the land is fertilized.

The amount of rain that falls in China depends upon the direction from which the wind blows. In winter, the winds blow from the cold regions near the centre of Eurasia and therefore bring little rain. During the

Map showing where rice is grown.



summer, the winds blow in from the ocean toward the hot central part of the continent and bring much rain. Rain is most abundant where the air is cooled as it is forced up and over mountain slopes. These winds that change their direction with the season are called *monsoons.* Regions where such seasonal winds blow and affect the climate are called *monsoon lands.* The monsoon rains are not always the same from year to year. If the rains are late in coming, early crops may be injured by drought. If there is too much rain, rivers may flood the farm lands and destroy the crops and villages. The amount of rain and the time when it falls are very important to the Chinese farmers.

The farm animals. In crowded China, farmers produce as much food as they can, but they do not raise many animals to provide meat or dairy products or to work on the farms. They need animals, but they cannot afford to feed them. The native grasses are not good for pasture, so that hilly land is not used for grazing cattle and sheep. However, each family usually keeps a few pigs and chickens. They are fed on the waste from the kitchen.

LIVING IN SOUTH CHINA

In South China there are three lowlands — the basin of Szechwan, which is called the Red Basin, the lower Yangtze Valley, and the Si Valley. The lowlands are separated by hilly or mountainous regions.

THE RED BASIN OF SZECHWAN

China is divided into a number of large provinces just as our country is. One of these provinces is called Szechwan. It is in the Yangtze Valley, more than a thousand miles from the sea. The city of Chungking, which you can locate on the physical-political map, is in this province. Probably as many as one-eighth of all the people of China live in Szechwan.

A lowland, rimmed by mountains, occupies more than half of Szechwan. This lowland is called the Red Basin because much of its soil is a red color. Mountains shut the Red Basin off from other parts of China.

Farming the Red Basin. In the Red Basin, as in many other parts of China, subsistence farming is carried on. Subsistence farming, as you may remember, is farming that provides only the food necessary for the farmer's family, with none left over to be sold. In the Red Basin the land may clothe as well as feed the farmer and his family, for many farmers grow cotton.

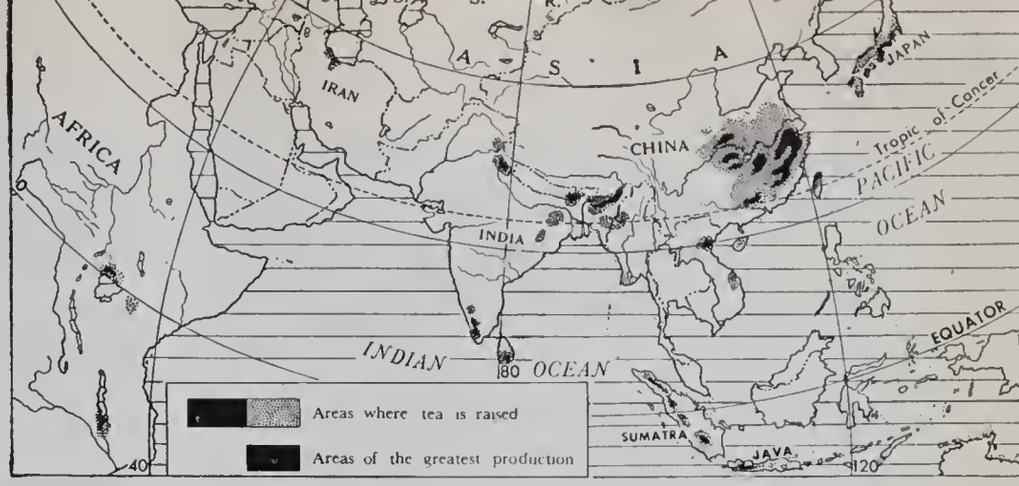
The climate in the Red Basin is surprisingly warm, because it is protected from the cold north wind by the mountains. It is so warm and the frost-free season is so long that crops can grow the year round.

The rainfall in the Red Basin is abundant. It averages about 40 inches a year. Much of it comes in summer, but there is enough rain in winter for crops to continue their growth. Old but very efficient irrigation systems supply water to the crops when necessary.

The red soil is naturally fertile. Level areas are carefully cultivated, and the low hills are covered with terraced fields. Many different crops can be raised.

The lowlands are used for growing rice, wheat, bananas, and sugar cane. Rice is the most important food crop. Irish potatoes are grown in the mountains, where the weather is cool. Cotton, sugar cane, tea, tobacco, and tung oil are the crops that are sold. Study the rice and tea maps on pages 337 and 339. Look especially at the Red Basin area; try to figure out which crops are grown in summer and which crops are grown in the winter.

The low slopes are usually covered with terraced rice fields. Mulberry trees grow on some of the hillier lands, and silk is one of the chief products. Tung oil is obtained from the seeds of the tung tree and exported to the United Kingdom. It is used in making paint, varnish, and linoleum.



Map showing where tea is grown.

As you can see from the picture on this page, the farmers of South China terrace their rice fields by building earthen banks around them. In doing this, they prevent the valuable topsoil from being washed away. They work ceaselessly to return all available fertilizer to the soil. They are practising soil conservation.

Cities of Szechwan. Chungking, the largest city in Szechwan, stands on high land overlooking the Yangtze River. There a tributary joins the main stream, as you can see on the map. This location has helped to make Chungking a busy trading centre. Rivers are more important for trade in China than they are in many places because there are so few highways and railways. Boats on the rivers are the chief means of transporting goods. Mineral deposits nearby helped it become a manufacturing centre.

This is a fertile and intensively farmed valley that lies between mountain ranges in Szechwan. Notice the crops of grain in the foreground of the picture, and the many rice paddies on the terraced land.

CNS from Paul Guillumette, Inc.





A Map of China.

THE YANGTZE PLAIN

The Yangtze Plain does not occupy a very large part of China, but every part of it is crowded. In some of the most densely settled parts, as many as 2500 people live on a square mile of land, not to mention the pigs, chickens, and donkeys that share the land with the people. People also live in houseboats on the river.

Crowded farm lands. In no other part of China is a larger proportion of the land under cultivation. In no other part of the world is it farmed with greater care. Much land is used for growing rice and wheat. Rice is the summer crop. It is grown when the weather is hot and the rain plentiful. Wheat is grown on the same land in the winter, when the weather is colder and drier. The water for irrigating the fields is usually lifted by chain pumps, or "dragon wheels," worked by water buffaloes or by men. There are no modern irrigation works. Much time is spent working the dragon wheels. The rice fields have to be flooded before planting, after planting, and after every weeding. During these operations the water is drained off.

Rice is first planted in seed beds and then transplanted to the muddy *paddy fields* when the rice sprouts are several inches high. While the rice is growing, the fields are kept flooded. The planting, weeding, harvesting, and threshing are all done by hand.

Cotton growing is becoming more important. In fact, the Yangtze Plain produces more cotton than any other part of China.

Large areas in the Yangtze Delta are used for growing mulberry trees to supply leaves for silkworms. In some places as much as a third of the land is used for these trees.

The use of the Yangtze. The Yangtze River has built up a low fertile plain where millions of people live. The river is the great highway for trade and travel, for the people of this densely populated region need cheap transportation. The Yangtze and its numerous branches serve a very large area. The lower Yangtze is so deep that ocean ships come up the river as far as the city of Hankow, seven hundred miles from the sea. Flat-bottomed boats go as far as Chungking, and thousands of *junks* and *sampans* pass up and down the river and its branches.

The Yangtze harms as well as helps. Sometimes flood waters rage down its valley and cause great damage as the water spreads out over the lowland. The other great rivers of China also often have disastrous floods.

Shanghai — gateway to the Yangtze Valley. Though three-fourths of the people in the Yangtze Valley are farmers, this region has more big cities than any other part of China. Not only are they large, but they are also more modern than most Chinese cities.

Shanghai's population is over 4,000,000. It is the second-largest city in Asia and one of the great cities of the world. It is the centre of China's commerce.

Shanghai has become very large chiefly because it is the gateway to the fertile and densely populated Yangtze Valley. The millions of people living on this plain help to make Shanghai a commercial centre. The traffic for the entire Yangtze Valley comes down the many tributaries of the Yangtze and down the Yangtze itself to Shanghai. The Valley is a market as well as a source of supplies to the trader. Most of China's foreign trade is carried on through this seaport, and imports are distributed from there to all of central China.

Shanghai is chiefly a commercial centre, but it also has many factories—some modern, others only small workshops. Within the city, the factories are situated where they can use transportation by river, canal, or railway. There are cotton mills, shipbuilding yards, flour mills, and factories for reeling silk. About how far is it from Shanghai to Japan? Is this an advantage in times of peace?

THE SI RIVER

The Tropic of Cancer crosses the Si River Valley. There, the sun will be directly overhead on June 21. As you have seen on the growing-season map, crops can be grown there the year round. How does the rainfall there compare with that in other parts of China?

A tropical region. The Si Valley is to southern China what the Yangtze Valley is to central China. Its southerly location is an asset. Because of its long, wet summers, two crops of rice a year can be grown on the same piece of land. One crop is harvested in June and the other in November. In this tropical region, sweet potatoes, sugar cane, oranges, pineapples, olives, and bananas are grown at low altitudes. Bamboo is one of

Here, lined up along the river front, are some of the largest and most modern buildings in Shanghai. Along the piers on the river you can see hundreds of fishing boats and houseboats.

Pix Publishing, Inc.



the most important plants. Although the region is densely populated, as the map on pages 14-15 shows, food production is so abundant that usually everyone has enough to eat. This is not true of all parts of China. On the delta of the Si and in some parts of its valley, the farmers use much of their land for mulberry trees and produce a fine grade of silk.

Canton is the main city of the Si Valley. Its trade is chiefly with the productive delta and valley of the Si River. There is some manufacturing in Canton, most of it carried on in small shops or homes. Silk cloth is the leading product. Jewellery set with jade, carved wooden ornaments, and articles made of bamboo, rice straw, paper, and rattan, are special products of this region. Rattan is the extremely tough stem of a climbing palm. It is used for making canes, chair bottoms, ropes, and rakes.

Hong Kong — a British island. Hong Kong is an island just off the coast of China plus a small piece of the mainland. Britain was given Hong Kong after she defeated China in the Opium War. It is now an important British naval base, the chief port of South China, and a distributing centre for the western Pacific islands. It serves as an *entrepôt.* An entrepôt is a port where goods are brought in by one ship, transferred to another ship, and then taken out of the port again. In the harbors of Hong Kong are large ships from every part of the world and small steamers, sampans, and junks from the regions nearby. Large ships, which cannot go up the Si River to Canton, stop there. Small ships bring goods from Canton to be shipped out. The islands of the west Pacific send goods to Hong Kong to be put on other boats. From what you know of the geography of this region you can guess the type of goods that pass through Hong Kong.

THE HIGHLANDS OF SOUTH CHINA

Turn to the physical-political map and find a region of highlands between the plains of the Yangtze and the lowlands of the Si River. Although this region is known as the South China Mountains, it is not really a mountainous area, merely a quite hilly one.

Thousands of acres of tea. Tea is an important crop of these highlands. It grows well on wet hillsides with good drainage. Rice and other crops are grown on the more level land. China produces more tea than any other country in the world, but she does not export very much.

LIVING IN NORTH CHINA

North China is the large area through which the Hwang River flows. You can see on the map on pages 304-305, that the region consists of two kinds of land — high land to the west, and low land to the east. The lowland is known as the Yellow Plain.

THE YELLOW PLAIN

Look at the great low plain in North China. It stretches southward from the city of Peking to the Yangtze River. It lies chiefly in the valley of the Hwang Ho. Most of it has been built up by the river itself. The Hwang River is called the Yellow River because it carries large quantities of yellow *silt* down from the highlands to the west. In times of severe floods, the river spreads out over the lowlands and deposits rich yellow soil. For this reason, the fertile plain in North China is called the Yellow Plain.



Alexanderson (CNS) from Paul Guillumette, Inc.

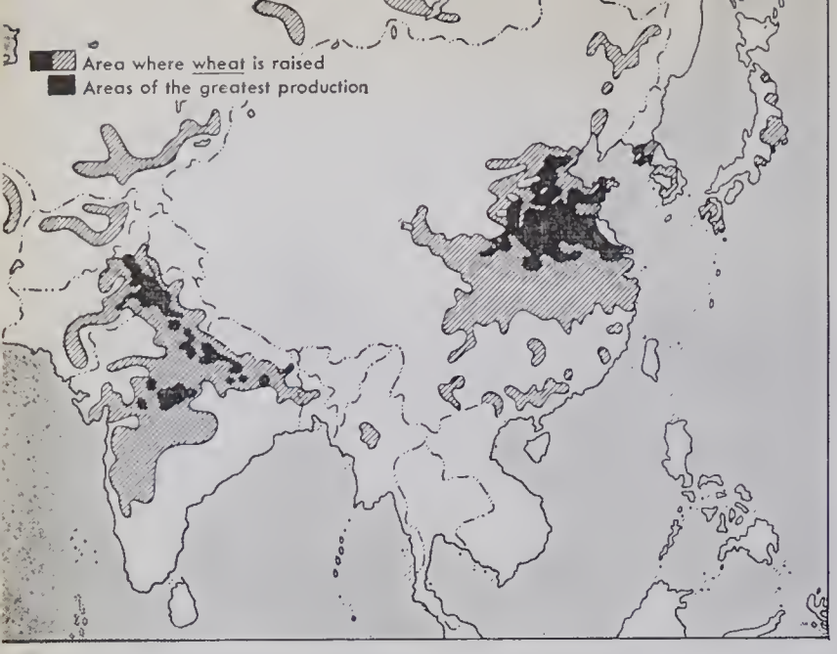
The Chinese farmer on the left is planting rice seedlings while the harvested wheat crop on the right is still being gathered. When the wheat is gathered, this field also will be flooded for rice planting. This system of harvesting and planting is known as interculture.

Wheat instead of rice. On the map on page 344 you can see that wheat is a very important crop in North China. The growing season is too short and the rainfall is too light there for rice. Winter wheat is the chief grain crop.

The same fields that are used for growing winter wheat are used for summer crops. The chief summer crop in the driest areas is millet. It is a grain crop that grows well in lands with hot summers. Other summer crops are soybeans, corn, and kaoliang, a kind of tall, coarse millet. Sweet potatoes are often planted between rows of millet and kaoliang. After the winter wheat is cut, corn and soybeans are usually planted on the same ground. Cotton is also grown on the Yellow Plain.

Peking, a northern capital. Turn to the map and find the city of Peking. It is near the northern end of the Yellow Plain, at the edge of densely populated farm land. Peking merchants do not do much trading with the farmers, however. Like many other parts of China, the surrounding country is poor because it is densely populated. Why, then, did Peking grow to be a large city?

The city stands at a place where important routes meet. One very old road used for trade and travel runs from Peking westward into Mongolia. This was once a caravan route, and over it camels brought wool, hides, and salt from Mongolia. Another road runs from Peking northeast to Manchuria; a third leads southward across the Yangtze; and a fourth connects Peking with Tientsin.



Map showing where wheat is grown.

These routes are now followed by railway lines.

The point where these trade routes meet was very important in the defence of North China and in trading with distant regions, but it does not completely explain the size of Peking. The city grew great largely because, for three centuries before 1928, it was the capital of China. It is a beautiful, big city with many fine temples and government buildings. It is enclosed by high, thick walls with many picturesque gates and towers.

In 1949, the Chinese Communists made Peking their capital. The Chinese Nationalist government set up its headquarters on the island of Formosa. Tientsin is the most important port for the region of North China.

THE UPLANDS OF NORTH CHINA

The region of hills and mountains west of the Yellow Plain is often called loess-land because it is covered with a very fertile soil called *loess*. This soil is a yellow dust brought by the winds from the desert and dry plateaus of Mongolia and Tibet. In a large part of the upland the layer is more than a hundred feet deep. The soil is fertile, but few people live there because there is little rain, and only a small area can be irrigated.

MANCHURIA, A VALUABLE REGION

You can see on the map that Manchuria extends northward from the Yellow Plain of China and borders the Soviet Union. Because of its location, both Japan and the Soviet Union have long wanted to control Manchuria. Japan wanted it because it was not densely populated and offered a home for Japanese settlers, and because it was rich in minerals and other raw materials that the Japanese need. One of the reasons that the Soviet Union wanted Manchuria was so that it might have a shorter route to Vladivostok. On the map on page 321, find the two railway lines that lead from Chita, in the Soviet Union, to Vladivostok. How much shorter is the Manchurian route? For many years Manchuria was a Japanese-controlled region and was called Manchukuo. Most of the people in Manchuria are Chinese, and it is now again a part of China. It was taken away from the Japanese when they were defeated in World War II.

A land of wheat and beans. The climate in the lowlands of Manchuria is much like that of the spring-wheat region in Canada and the United States. Crops resemble those of North China, but the farms are larger because the population is less dense, and there is usually a surplus to export. Wheat is an important crop. Soybeans, however, are by far the most valuable crop. They can be used as food for both people and animals. The soybeans also provide raw material for making products such as oil, soap, fertilizer, and paint. Large quantities of soybeans are exported from Manchuria each year. Some are shipped to other parts of China and to Japan. Some of the soybeans are shipped in the form of bean cakes or oil.

A manufacturing region. In Manchuria, conditions are favorable for manufacturing. It has rich beds of coal and iron. Find Mukden on the map. The coal deposits near that

city are among the thickest and largest in the world. Fuel oil can be extracted from oily layers of rock that are found near the coal beds. There are deposits of iron ore nearby. Mining has been developed on a large scale. In the surrounding region are several manufacturing districts with coke ovens, blast furnaces, steel mills, foundries, and machine shops. Many of these industries were started by people from Japan when that country controlled the region. Dairen is the chief seaport of Manchuria. Railways bring products to this port from the industrial districts of the north.

OUTER CHINA AND RELATED LANDS

China includes, not only the densely populated eastern portion, but also three provinces which, taken together, are known as Outer China. These provinces are Tibet, Sinkiang, and Inner Mongolia.

TIBET, THE ROOF OF THE WORLD

Tibet is a great high plateau deep in the heart of Asia. It is sometimes called the "forbidden land" because it is so difficult to reach. High mountain barriers, very difficult to cross, enclose it on every side, and nearly all the land is more than 10,000 feet above sea level. The climate is cold because the land is so high, and the surrounding mountains get most of the rain. On this cold, dry, treeless, wind-swept plateau, it is hard to make a living. As a result, the population of Tibet is very sparse.

In the sheltered valleys along the northern slopes of the Himalaya mountains, the land is irrigated by streams flowing from the mountains, and small crops of barley, wheat, and vegetables are grown. On the plateau, the land is too dry for farming. Water is not available for irrigation because the streams flow in deep canyons. Nomadic herdsmen of the plateau tend sheep, goats, and yaks. The yak is a sturdy animal. It is used as a beast of burden on very difficult trails over rocks and up steep slopes. Its long hair is woven into cloth and used for making clothing and tents. The yak also supplies meat, butter, and milk.

SINKIANG

Though Sinkiang is farther north than Tibet, the climate there is not so cold because the altitude is not so high. Find what the various maps tell you about Sinkiang.

Many caravan routes cross Sinkiang. You can see why caravan routes cross Asia by this route. It is the easiest land route from Europe to the Pacific. There are still no railways in Sinkiang, but the caravan routes have been made into roads.

Most of Sinkiang is desert, but during the summer, melting snow on mountains supplies water for irrigation in several valleys near the foothills. In these scattered oases fruits, barley, cotton, and tobacco are raised. In places where there is grass, herds of sheep are raised by nomadic tribes, but most of the land is a barren desert.

Tibetan farm workers take a break and have a drink of curd tea.

Eastfoto



MONGOLIA, A LAND OF NOMADS

For a long time both Inner Mongolia and Mongolia were a part of China, but recently Mongolia has had closer relations with the Soviet Union.

The port of Tientsin, which is near Peking, exports hides and wool that come from Mongolia. The nomadic people keep sheep, cattle, and camels on the outer rim of the Gobi Desert. In most parts of the country the rainfall is less than five inches. Life among the Mongolian nomads is similar to that in many other parts of Asia.

KOREA, A LAND OF STRIFE

The country of Korea occupies a peninsula that extends southward from the Chinese mainland. Find it on the map.

Korea is a country with a very troubled history. Many times other nations have tried to control it. In 1910, Japan took possession of it. At the close of World War II, Korea was freed from Japanese control. A few years later, however, it was the scene of another horrible war. Today, it faces an uncertain future.

Farming in Korea. Korea is chiefly a region of mountains and has no large plains. The small plains are crowded with farms. The farmers find it hard to make a living. Almost a third of the farm land is used for growing rice. Other crops are barley, tobacco, and cotton.

Raw materials for factories. Nearly two-thirds of Korea is covered with forests. The best timber, which is along the Manchurian border, consists chiefly of pine, fir, and spruce trees. Forests farther south are used mainly to supply firewood. The country has a great variety of minerals, and valuable coal, iron, gold, copper, tungsten, and silver mines have been developed. Thus Korea has many raw materials needed for manufacturing. Mines and factories have increased in number. Transportation has been improved, and hydro-electric power developed. Most of the raw materials are in the north, and most of the farms are in the south.

An ox-cart caravan crossing the Gobi Desert. The drivers have stopped for the night.

Ewing Galloway



JAPAN—AN ISLAND NATION

Look again at the four large islands of Japan on the physical-political map. The largest and most important of the four islands is Honshu. It is about the same size as Great Britain. The Japanese islands are closely linked by steamship lines, railways, telephones, and radio, which are all modern. The port facilities of the islands are also modern and very busy.

The four islands together are only about one-third as large as Ontario, but eighteen times as many people live on them as live in Ontario. The total population of Japan is about six times as large as the population of Canada.

On the map on pages 304-305, find the latitude of the Japanese islands. If they were placed along the Atlantic seaboard of North America in the right latitude, they would reach from Florida to Nova Scotia. Because of its great length from north to south, Japan has a variety of climates. The climate of Kyushu is like that of the south-eastern United States. That of Hokkaido is like the climate of Nova Scotia. The islands of Japan also differ a great deal in density of population. Perhaps because of their milder climate, the southern islands are much more densely populated than the island of Hokkaido.

FARMING AND FISHING

Japan is a land of mountains. On the physical-political map you can see that the mountains almost cover the islands. The largest and highest mountain mass is near Tokyo. Mount Fuji, or Fujiyama, is in this group. It is a great volcanic cone, so high that its summit is covered with snow except in midsummer.

High mountainsides in Japan are green with forests. Small areas of land level enough for rice farming are scattered here and there.

Intensive agriculture. Only about one-sixth of this small country can be cultivated, because so much of it is covered with rugged mountains. The good parts of the country are so crowded that more than a thousand people live on a square mile of land. The farms are small, most of them containing less than three acres. Japan's biggest problem has been to make its small amount of farm land produce enough food for the large population.

A small fertile plain. The centre of Japan is Honshu, and the centre of Honshu is the plain on which Tokyo is located. Find this plain on the map on pages 304-305. It faces the Pacific Ocean and is bordered on the north, west, and south by mountains. The plain has been built up by rivers that carry rich volcanic soil down from the mountains of central Honshu. It has a monsoon climate, like most of the coastal lands of China. In summer, southeast winds blow from the ocean and bring plenty of clouds and rain. In winter, the mountains protect the plains from the cold northwest winds that blow from the interior of Asia. A long frost-free season makes it possible to grow

A Japanese girl in a textile factory.

Courtesy Embassy of Japan





Map of Japan.

two crops each year on the same piece of land. Rice is the most important crop in Japan.

Using the hillsides. However, much of the land of Japan is not suitable for growing rice. Rice needs level land, for the fields must be flooded. Some of the hilly land is terraced for growing rice, but most of it is used for wheat, barley, millet, and sweet potatoes. Wheat and barley are grown also on some of the rice lands. The wheat and barley are planted in the fall, after the rice has been harvested, and they are harvested before a new crop of rice is planted in the spring.

Hillsides are used for growing tea. The best lands for tea are the slopes in the highlands of central Honshu, just west of Yokohama.

A cash crop. The Japanese people were producing silk centuries before they began to trade with the rest of the world. Now they produce more than half the raw silk of the world. Both Japan and China have the advantage of having cheap labor. Since much labor is involved in the making of raw silk, this is an important consideration.

Mulberry trees can be grown in nearly all parts of Japan, but most of them are grown in central Japan. There, mulberry trees are grown wherever the land is not suitable for raising crops. The Japanese sell the silk to many other countries.

Farming in Hokkaido. In what latitude is Hokkaido? The winters in this cold, snowy, northern island are severe, and the frost-free season is usually less than 150 days long. As a result, hardy northern crops, such as wheat, rye, barley, and potatoes, are raised.

The importance of fishing. Nearly two million Japanese people make their living by fishing. Fortunately for crowded Japan, some of the best fishing grounds in the world are found in the shallow waters nearby. Meat is scarce in a country so crowded that there is not enough room for both people and animals, and fish are eaten in place of meat.

Warm and cold currents off the shores of Japan make an ideal environment for a variety of fish. There are more than four hundred kinds of sea food in the waters near Japan. Bonito, tuna, and herring are important fish. Seaweed is used in making a kind of jelly called isinglass, and fertilizer.

MANUFACTURING AND TRADE

Japan is poor in most mineral resources, though copper, gold, and silver are mined in sufficient quantities to supply the country's own needs. There are no large deposits of iron ore.

Although much of Japan is wooded, the forests do not supply large quantities of raw materials, and lumber and pulp are imported. A common product of the Japanese forests is bamboo. Its hollow stem is used for making paper and even for building houses.

Sources of power. Japan has moderate supplies of coal, but most of the coal is of very poor quality and cannot be used for making coke, which is needed in metal industries. Japan has very small supplies of petroleum. In one month, Canada produces more petroleum than Japan produces in a year.

When it comes to hydro-electric power, however, the story is different. Electric power lines serve every part of the country. Only two countries in the world, Canada and the United States, produce more hydro-electric power than Japan. There are two reasons why Japan is able to produce so much hydro-electric power — the many mountains and the abundant rainfall.

The chief manufacturing centres. Most of the heavy manufacturing in Japan is done in the narrow belt of land that extends from Tokyo southwest along the shores of the Inland Sea to the city of Nagasaki, on the island at Kyushu. Within this region are found all of Japan's largest cities.

Tokyo and Yokohama. Find Tokyo and Yokohama on the map. They are situated on Japan's largest stretch of level land. With the growth of industry, Tokyo became almost as large as New York City.

Tokyo, the largest city of Japan, cannot be reached by large ships, because it lies at the head of a shallow bay. For this reason, Yokohama has become the seaport for Tokyo and one of the important seaports of Japan. Tokyo is a centre for the manufacture of machinery and electrical goods. Hydro-electric power for factories is obtained from mountain streams nearby.

Osaka, and neighboring industrial centres. Turn to the map and find the city of Osaka.

Examples of the old and the new in Japan. In the picture on the left a Japanese farmer and his wife are pumping water from a ditch into a rice field with a treadmill. On the right is a street in Tokyo.

Pictures by Ewing Galloway







Courtesy Embassy of Japan

A Japanese farm woman holding a bundle of wheat.

There are other large cities nearby, but Osaka is by far the largest. It is the leading manufacturing city of Japan and one of the great manufacturing cities of the world. Kobe, which is near Osaka, is the leading seaport of the country.

The cities in this region became important commercial and manufacturing centres because they have a number of advantages. They stand at the eastern end of the Inland Sea, and they are in the centre of the most thickly settled part of Japan. This means an abundant supply of workers for the factories and a big market for finished products. The Osaka district manufactures a variety of products, but textiles and machinery hold first rank.

Japan's foreign trade. Japan has natural advantages that enable it to share in world trade. A location just across the Pacific Ocean from the Americas is a great advantage. Japan has a large supply of man power. It is near densely populated lands that do little manufacturing. This aids Japan in marketing a great variety of manufactured goods. Japan needs to buy food and raw materials from other nations, as well as to sell manufactured goods to other nations. Her welfare depends upon her foreign trade.

THE GEOGRAPHY WORKSHOP

I. FLYING TO EASTERN ASIA

Turn to the map of the Pacific Ocean on pages 396-397. Is any part of southeastern Asia straight west of your home? If so, choose a spot for an imaginary visit. Imagine you are going to fly to this spot by the shortest possible route. Will you fly straight west? How long will it be by the direct route you plan to take? Use a globe for measuring the length of your route.

II. THE WORLD IN YOUR COMMUNITY

If you can find in your community some goods that have been imported from eastern Asia, they will make an especially interesting exhibit. Ask for ornaments, samples of silk from China and Japan, and Chinese embroidery. Be sure to look in the grocery store for tea from China and Japan. There may be other foods imported from eastern Asia, such as canned bean sprouts, bottled sauces, lichee nuts, and preserved kumquats. A store that sells dishes will probably have some from China. Chinaware, a name for dishes, suggests the fact that dishes have long been imported from China.

Another part of your exhibit may be made up of toys and other small, cheap articles. You have learned that many such articles are made in home workshops in



CNS from Paul Guillumette, Inc.

China and Japan. For example, there are those tiny colored sticks that open into flowers when you drop them into water. Puzzles and games, small toys, artificial flowers, cameras, binoculars, shoes, and sporting goods are all imported from eastern Asia.

Another part of your exhibit might show things that came at first from eastern Asia. Soybeans are now an important crop in Canada too, but the first seeds were brought from eastern Asia.

Chinese lilies and other plants came from eastern Asia. Goldfish came from there, too. Plants and goldfish might be added to your exhibit.

III. PEOPLE YOU WOULD LIKE TO MEET

Many large cities have a section called Chinatown. If your class can visit Chinatown in a city, you might enjoy it very much. There you will see Chinese stores and restaurants. Signs on the buildings are in Chinese. There are not as many Japanese people as Chinese in Canada. However, in many communities you may find people who have come here from Japan. Some of them may be willing to tell you about their native land.

IV. WHAT YOU CAN READ FROM PICTURES

The picture on this page was taken from an airplane flying over a region in eastern Asia. The region is described in one of the quotations given in the paragraphs below. The quotations are from pages 337, 342, and 348 of this book. By finding the quotation that fits the picture, you can find out where it was taken.

1. "As much land as possible must be cultivated. To save space, the farmers get along without fences, roads, pastures, and

barnyards. Much of the lowland is irrigated."

2. "The farmers use much of their land for mulberry trees and produce a fine grade of silk."

3. "Some of the hilly land is terraced for growing rice, but most of it is used for wheat, barley, millet, and sweet potatoes."

The picture shows a field, a large irrigation canal, smaller irrigation ditches, and a number of villages. Can you find all these things? Remember that in the densely populated regions of eastern Asia trees are allowed to grow only around the houses and along irrigation canals.

How could you prove from the picture that this is a region of intensive farming?

The pictures on pages 217, 220, and 223 were taken in regions of intensive farming in Europe. The picture on page 217 shows scattered trees and hedges between the fields. How is this different from the arrangement of trees and bushes in the picture on page 351?

The picture on page 351 and the one on page 223 both show canals and ditches. Are the canals in both pictures used for the same purpose? What are the canals in these pictures used for?

A winter scene in Japan. The winter snows supply the mountain streams that give Japan hydro-electric power.

J. Diefenderfer, Jr.



V. A MAP TO MAKE

The map suggested below is hard to make. Do not try it unless you enjoy making maps. You will need an outline map of Eurasia. You may trace it from the map on pages 304-305.

1. Draw a heavy black line around the section we have been calling eastern Asia.
2. Color light blue all of eastern Asia that has less than 20 inches of rain a year.
3. For the next step, use the physical-political map. On your outline map, color brown the rough mountain regions. Never mind if two colors overlap.
4. Color red the main areas of eastern Asia that have more than 250 people to the square mile. Draw a heavy red line around the area that has 125 to 250 people to the square mile.

Do you see how the map helps to answer the question: Why do the people of eastern Asia live where they do?

VI. WHAT WOULD YOU BUY?

Large city department stores in Canada send buyers to other countries. The buyers look for things to import for their stores.

Imagine you are a department-store buyer on your way to buy articles in eastern Asia. You wish to buy everything you think your store can sell. The articles must be things Canadians would like to have, and they must sell for reasonable prices. They must be things that are made in eastern Asia. What would you buy?

VI. PICTURES TO SORT

Imagine you are looking at pictures of the scenes described below. Which of them could have been taken in eastern Asia?

1. A flock of sheep on a wide grassland
2. A steel mill
3. Barges on a canal
4. A large field of sugar beets
5. A fishing fleet



INDIA, PAKISTAN, AND CEYLON

The darkened area on the map above has long been the country of India, but today it contains three countries — Pakistan, Ceylon, and the Union of India.

On the map locate these countries. Until 1947, these were one country controlled by Great Britain. In that year, Britain gave India and Ceylon their independence, and they became independent countries in the British Commonwealth of Nations. There are two large religious groups in India, the Moslems and the Hindus. Once Britain was no longer in control to keep the peace between these two groups, they found that they could not work together. The Hindus would not let a Moslem prime minister rule them, and the Moslems would not agree to do what a Hindu told them. After much rioting and bloodshed India was divided into two countries — Pakistan, which contains most of the Moslems, and the Union of India, which is a Hindu state. Ceylon had already become a separate country.

Pakistan is divided into two parts. About one thousand miles of Indian territory lie between Eastern Pakistan and Western Pakistan. This is awkward for both countries, but because the Moslems live in two separate regions there was no other arrangement that could be made.



Courtesy Information Service of India

These women are picking tea leaves. Strapped to their backs are light bamboo baskets into which they put the tea leaves.

Millions of people. India, Pakistan, and Ceylon are crowded countries — more crowded even than China. In the Union of India, an area that is only a little larger than Ontario and Quebec, live twenty-five times as many people as live in the whole of Canada. Though Baluchistan in Western Pakistan is not densely populated, the other parts of Pakistan are. Its total area is about the same as that of British Columbia; its population is more than 75,000,000. Ceylon, whose area is equal to that of New Brunswick, has half as many people as Canada. Four-fifths of the population of the Commonwealth are crowded into these three countries.

The three seasons. The *subcontinent* has three seasons. From October or November until February it is cool and dry. It is never too cool for crops to grow except in the mountains, but in the northwest, the scantily clad natives shiver during the nights and mornings. By April the subcontinent is receiving the direct rays of the sun, and the temperature rises rapidly. The sun is directly overhead at noon in some part of India from April until August. May is usually the hottest month. The heat becomes almost unbearable at that time; whirlwinds pick up dust and leaves from the baked ground, vegetation withers and dies, and ponds dry up. The whole country suffers. This is the hot dry season. During the summer the European women and children and all the men who can get away move to the hills where the weather is cooler. Darjeeling is a popular *hill station.*

Early in June the people begin to watch for a change in the weather. Finally, the direction of the wind shifts so suddenly that the monsoon is said to burst. Huge black clouds darken the sky, and soon the rains begin. In some parts of India monsoon rains are only showers; in other parts the water falls in great, blinding sheets. Rain lowers the temperature slightly, but the moisture makes the heat oppressive. Soon the landscape, so dreary and brown during the dry season, is a mass of green again, this time with summer crops.

If you had rainfall maps of India showing summer and winter rains, you would see that there is a great contrast between the two. In the winter, hardly any part of India has more than 10 inches of rain, and many

parts have less. In the summer, the rainfall is extremely heavy in all but a few regions. It is the difference in rainfall between the seasons that makes it necessary to have irrigation in regions that seem to have an adequate rainfall.

WHAT WE CAN LEARN FROM MAPS

LOCATING INDIA, PAKISTAN, AND CEYLON

1. On the map on pages 304-305 locate India, Pakistan, and Ceylon. You can see that high mountains on the north separate India from the rest of Asia, while bodies of water on the other three sides make this area a vast peninsula. What sea lies between this region and southwestern Asia? Find the Bay of Bengal. Print the names India, Pakistan, and Ceylon on your outline map of Asia, and color that part of the map. Put in the names of the seas and the mountains.

2. Through what part of India and Pakistan does the Tropic of Cancer pass? About how much of India is in middle latitudes? How much is in low latitudes? About what is the latitude of the northern part of Ceylon?

3. Turn to the world map on pages 2-3 to see what part of North America is in about the same latitude as India. About how many degrees south of southern Canada is the most northern part of India? How does the climate of Canada compare with India's climate? Explain why the two climates are so different.

LOWLANDS AND HIGHLANDS

The Indo-Pakistan subcontinent has a variety of *surface features*, and their arrangement is easily seen. Notice the shape. After tracing its boundary with your finger, you could probably make a fairly good drawing of it.

1. There are three large divisions of surface features in the subcontinent: the mountains in the north, the plateau in the south, and the wide plain between the two. Find the Himalaya Mountains along the northern boundary. In the eastern part of the Himalayas is Mount Everest, the highest mountain peak in the world. The Hindu Kush mountains in the northwest are also very high. With the Himalayas, they form a wall that almost completely separates Pakistan and India from the rest of Asia. Locate the Khyber Pass, an important gateway to southwestern Asia, on the map on page 356. On the physical-political map, trace the western part of the mountain border into the Pakistan province of Baluchistan. You can see that the mountains and plateaus of Baluchistan are continuous with those of Afghanistan and Iran. Along the northeastern edge of India are mountains that help to separate India from Burma.

2. Most of the peninsula is a plateau. It is called the Plateau of the Deccan. Its steep western slope is called the Western Ghats. The slope is so high and steep that it resembles a mountain range.

3. Between the plateau of southern India and the mountains of the north is a great plain. Through it flow three large rivers and their tributaries. Find the Indus River, in Pakistan. Where does it rise? After leaving the Himalayas, in what direction does it flow? Some of its tributaries are shown. Where do they rise?

Farther to the east is the Ganges River. In what general direction does it flow? You can see that the Ganges divides into several streams before entering the Bay of Bengal. Describe the long course of the Brahmaputra River. The Ganges and Brahmaputra rivers built the delta through which they flow to reach the Bay of Bengal.

FOLLOWING THE COASTLINE

1. Begin with Baluchistan and follow the coast to the boundary of Burma. Are there many or few irregularities along this coast? In the distance of about 5000 miles of coastline, there are only a few natural harbors. Find Bombay on the map on pages 304-305. It is built at the best harbor. Find Karachi, the capital of Pakistan, near the mouth of the Indus River. Madras, a good-sized port on the Bay of Bengal, has an artificial harbor. Locate Calcutta, near the mouth of the Ganges. The two gulfs on the west coast are too shallow for large ships.

2. How far is Ceylon from India? The capital and chief port of Ceylon is Colombo, which is in an excellent position for carrying on trade. Turn to the map, on page 212, to see how many routes meet at Ceylon.

CLIMATE AND VEGETATION

1. Turn to the map on pages 10-11 to find the length of the growing season in the subcontinent. It has a *tropical climate*. How does the latitude help to explain this? How do the Himalayas affect the climate of the subcontinent.

2. Since you know about the arrangement of surface features, would you expect the rainfall to be evenly or unevenly distributed? Check your answer by the map on pages 8-9. Which part of the subcontinent has very little rainfall? Which parts have very heavy rainfall? Where is the rainfall from 20 to 40 inches? Compare the rainfall of the Eastern Ghats and the Western Ghats. How does the rainfall of Baluchistan compare with that of the region north of the Bay of Bengal?

3. Most of the rainfall comes in one rainy season which lasts from three to six months. As you have seen, the amount varies from place to place. Would you expect the natural vegetation to vary a great deal from place to place? Turn to the map on pages 12-13 to see how many types of vegetation grow in the Indo-Pakistan subcontinent. What kind do you find in the regions of heaviest rainfall?

A map of India, Pakistan, and Ceylon.



DISTRIBUTION OF POPULATION

Turn to the map on pages 14-15 to see how the large population of the subcontinent is distributed.

1. Which of the three divisions has the densest population, the northern highlands, the northern lowlands, or the plateau?

2. Why is the strip of dense population narrower on the west side of the peninsula than on the east side?

3. Compare the population of Baluchistan with that of the area of similar size on the opposite side of the subcontinent. What maps suggest reasons for the existence of this difference?

4. Why is the population sparse in the region east of the lower Indus Valley?

FARMING IN INDIA, PAKISTAN, AND CEYLON

The Indo-Pakistan subcontinent is an agricultural land, and the densest population is found where the land is best for farming. India has some very large cities, but about four-fifths of the people live in villages and cultivate the nearby fields.

Most of the farm work is done with primitive tools, for the farmers of the subcontinent are miserably poor. Humped cows, oxen, and water buffaloes do the work that horses and machines do in Canada. Although the subcontinent has more cattle than any other region in the world, cattle raising is not a profitable industry, and dairy products such as butter and cheese are almost unheard of. Most of the cows are half-starved work animals. Because the Hindu religion forbids the taking of life, many cattle unfit for work roam about searching for food.

The subcontinent may be divided into three large farming regions — the northern highlands, the Indus-Ganges plain, and the Plateau of the Deccan. Let us see how the people live and work in each of these three regions.

THE NORTHERN HIGHLANDS

The beautiful Vale of Kashmir. Turn to the map and find the province of Kashmir, hemmed in by the Himalayas and the Hindu Kush mountains. In the midst of these snowy peaks lies the broad, green valley known as the Vale of Kashmir. Through this high valley flows a winding tributary of the Indus River. Surrounding it are cultivated fields, and herds of goats live on the scanty hillside pastures. But the region is noted not so much for agriculture as for its beautiful scenery and ideal climate. It is very popular with tourists. It is one of the hill stations to which people go in the hot season. Most of the travelling there is done on the winding river, because there are few roads in this region.

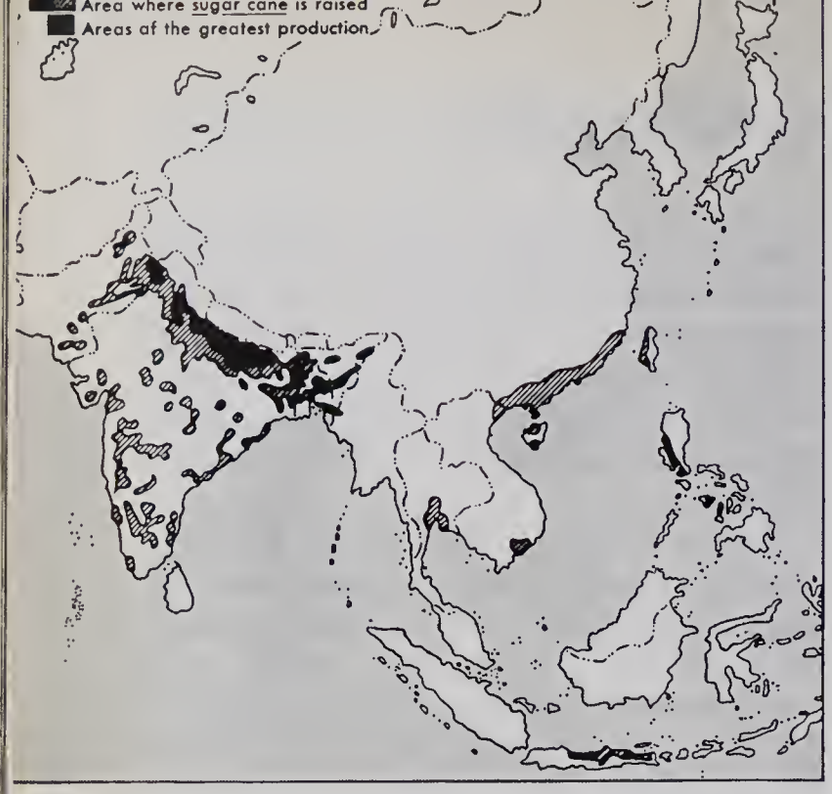
Tourists enjoy the bazaars of Kashmir, where they can buy many articles that the local people have made by hand. Beautiful embroidery work, and carpets and shawls woven from the fine soft wool of the flocks are made by the village craftsmen.

The dry highlands of Baluchistan. Look at the map on page 356 and again find Baluchistan. As you know, the rainfall there is very light. There are no large streams that can be used for irrigation, and getting water for the fields and gardens is a difficult problem. Like the neighboring regions, Baluchistan is very sparsely settled.

Indians cutting tall stalks of jute. Jute grows well on the delta lands of the Ganges, where it is hot and there is much moisture.

Courtesy Government of India Information Services





Map showing where sugar cane is grown

Wheat, barley, millet, and fruits are raised where the land can be irrigated, but most of the people are nomadic herdsmen who drive their flocks of sheep and goats from place to place in search of water and pasture.

THE INDUS-GANGES PLAIN

Crowded delta lands. Two large rivers, the Ganges and the Brahmaputra, have built up a great delta along the northern shores of the Bay of Bengal. Over 50,000,000 people live on these flat fertile lands — more than three times as many as live in all of Canada. So crowded is the delta that in some places nearly two thousand people live on a square mile of land. In only a few other parts of Asia would you find land so thickly populated. How can so many people make a living in this region?

For one thing, the soil is fine and fertile and deep. From time to time, the streams overflow and deposit a layer of rich mud on the fields. Secondly, it is possible to grow several crops a year on the same field because the growing season lasts the year round.

There are almost no roads or railways in the delta. The ground is swampy there, and many bridges would be needed to cross the numerous streams. Farmers use boats instead of carts.

Rice, the great food crop. In the delta and the lower Ganges Valley, rice is by far the most important crop. If you look at the rainfall map, you will see that this area has more rain than the lands to the west. Enormous quantities of rice are raised, but there is little to sell abroad. There, as in many other densely populated areas in Asia, the people live chiefly on a rice diet, and they use all the rice that they can grow themselves.

Jute, a cash crop. The subcontinent raises more than nine-tenths of the world's supply of jute. It is the chief crop in the eastern part of the delta. It is a swamp-loving plant, and will thrive only in rich soils in a tropical climate. Much of it is made into burlap, a coarse, cheap cloth often used for making gunny sacks. Bales of cotton and wool are wrapped in burlap. Jute is also woven into cloth for clothing and is used in the manufacture of twine, carpets, rugs, and linoleum.

Tea to sell. Over half of all the tea exported in the world comes from India, Pakistan, and Ceylon. Turn to the map on page 339 to see where it is grown. North of the delta lands are great tea plantations, owned and managed by large companies. Most of them are on the low slopes bordering the Brahmaputra River. Tea is usually grown on sloping ground, because it must be well drained and because such land cannot be used for rice.

The Upper Ganges Valley. The central and upper parts of the Ganges Valley slope gently to the southeast. The rainfall gradually decreases from east to west. In the eastern part of the valley, wherever there is

sufficient moisture, rice is the most important crop, just as it is in the delta. Where there is less rain, wheat, barley, millet, and sugar cane are grown, as well as rice. Rice is the most important summer crop. Wheat, barley, and millet are common winter crops. They are planted at the close of the rainy season and harvested before the hot summer weather comes.

Sugar production. The subcontinent produces more sugar cane than any other country in the world. In spite of this heavy production, India and Pakistan usually have to import sugar. Most of it is grown on small plots in the Ganges Valley. The juiciest sugar cane is grown where a season of heavy rain is followed by one of sunshine and little rain. The monsoon type of climate found in the Ganges Valley is good for sugar cane. By using irrigation during the winter, the people of the Ganges are able to grow sugar the year round.

The Indus Valley — a great oasis. Turn to the map and find the plains that lie between the upper Ganges River and the upper Indus River. This region is the Punjab, a word that means "land of the five rivers." The Punjab is one of the best farming regions in India. It receives only a light rainfall in the summer, but water for irrigation is supplied by hundreds of canals from modern irrigation works, which have been built on the Indus and its tributaries. During the rainy summer season, the lands of the Punjab are used chiefly for growing millet, corn, and cotton. During the drier winter months, most of the land is used for growing wheat and barley. Wheat yields are low in the Punjab, only about twelve bushels per acre, but some years there is a surplus, and wheat is then exported from Karachi.

The rainfall of the lower Indus Valley is even lighter than that of the Punjab, and the land cannot be used for crops unless it is irrigated. You may think of the Indus Valley as being similar to Egypt. It is an irrigated tropical desert.

THE PLATEAU OF THE DECCAN

Much of the Plateau of the Deccan is rough and hilly. The western part of the Deccan has rich volcanic soil, but rain falls only during a short season. When the monsoon winds blow from the Arabian Sea, they

This farmer in the Punjab is cultivating his small field with a wooden plough and a team of oxen.

Philip Gendreau







Pictures courtesy Information Service of India

Two factories in India. In the picture on the left tanned leather is being rolled out. The man in the right-hand picture is tending a machine in a cotton mill.

rise to cross the Western Ghats. These winds bring drenching rains to the western side of the mountains, but they carry only small supplies of moisture eastward across the plateau. Because the surface of the plateau is so irregular, little irrigation can be carried on.

Farming in the Deccan. During most years there is enough rain for low yields of grain crops. Millet is the chief grain crop because it needs little moisture, but rice is raised wherever irrigation is possible because it gives more food value per acre.

The Indo-Pakistan subcontinent grows fifteen per cent of the world's cotton. The area of heaviest production is the Deccan, where cotton is grown on farms of about ten acres each. The farmer works hard but, with his simple tools, he gets only about half as much from each acre as does a grower in the United States. Nor does he get as good a price, for the fibres of Deccan cotton are short and coarse.

The coastal lowlands. The narrow coastal plain along the western side of the peninsula has very heavy rains in summer. Coconut palms lean toward the sea all along the coast, and they are also grown on plantations. Rice is the leading crop, but many other tropical plants — peppers, bananas, and mangos — grow in great abundance on the warm, wet lowlands. On the slopes are rubber, tea, and coffee plantations.

The plain along the eastern coast of the peninsula is wider than that along the western coast. The region is tropical, but it has a rather light rainfall, as the map on pages 8-9 shows. Millet, rather than rice, is the leading crop. Rice, however, is grown on the delta lands wherever water is available.

THE ISLAND OF CEYLON

Ceylon is a region of highlands surrounded by coastal plains. Because of Ceylon's latitude and because it is surrounded by water, the range in temperature

is small. Both summer and winter winds bring rain, and rainfall is heavy because of the highlands.

Much of the land in Ceylon is laid out in large plantations, owned and operated by the British. Rice is grown on the low, wet plains, but not enough is produced for the people's needs. On the sand dunes along the coast are groves of coconut palms. On the lower slopes of the highlands are rubber plantations. The wet hillsides are covered with tea plantations. Plantation products are exported to many lands from the port of Colombo.

MANUFACTURING AND TRADE

Long before the coming of Europeans, native craftsmen in India made pottery, farm tools, cotton cloth, vegetable oils, and many other such things. Even today, most of the subcontinent's manufactured goods are made by primitive methods, for the people are only beginning to learn to use machines. But in the large cities there are factories turning out goods that are needed by the people. Their raw materials are mostly products of the farms. Yet the subcontinent ranks high among the industrial regions of the world because of the great quantity of the articles made throughout the region. Every village has its craftsmen, and when all the things made in the villages and cities are added up, the total is surprisingly high.

MODERN INDUSTRIES

The manufacture of textiles is the characteristic industry. Because it is so warm on the subcontinent, most of the people wear cotton clothing. Although the demand for cotton is large, most of it can be satisfied by the mills of India and Pakistan.

The jute industry employs almost as many people as the cotton industry. Paper is manufactured from the waste materials of the textile factories. Sugar refineries, coconut and oil mills, and leather tanneries are among the other factories.

Mining. India has some valuable mineral deposits. It leads the world in the production of manganese, a mineral used in making high-grade steel. It has large iron deposits which, like Canada's deposits in Ungava, can be mined by open-pit methods. India also has good soft coal. Manganese, iron ore, and coal are found close together about 150 miles west of Calcutta. There, at Jamshedpur, is the largest iron and steel plant in the Commonwealth, the Tata Iron and Steel Works. In such crowded lands, labor is so abundant and cheap that the mills can produce iron and steel at a low cost.

SEAPORTS AND INLAND CITIES

The subcontinent has few good ports. In many ports, vessels must transfer their cargoes to lighters because the water is too shallow for them to come close to land. Lighters are large, open, flat-bottomed boats

These workers are laboriously transplanting rice in a field in India. The people of India do much more work by hand than do people in Europe or this continent.

Courtesy Information Service of India



used in loading ships. The large cities are connected by railways, highways, and air lines, but as yet the masses of the people are not much affected by these conveniences.

Calcutta, rich city of the delta. Calcutta is India's largest city and leading seaport. It is built on the delta of the Ganges, about eighty miles from the Bay of Bengal.

It is the centre of a large trade with the rich farm lands of the Ganges and Brahmaputra valleys. Calcutta has rail connections with cities in all the important producing areas of India and Pakistan. Cotton and cotton cloth are shipped there from the Deccan. Tea comes from Darjeeling, in the foothills of the Himalayas.

Bombay, India's most modern city. Together, Calcutta and Bombay handle four-fifths of all the foreign commerce of India. The harbor of Bombay is excellent and beautiful. Bombay has become an important commercial and manufacturing centre largely because of its safe harbor and its nearness to the best cotton-growing region of the Deccan. It is the cotton centre of India. It also has one of the few good natural harbors in India. Its cotton mills are operated by hydro-electric power which is generated by streams flowing down from the Western Ghats.

Madras, India's third-largest city. Madras' harbor is entirely artificial. It is an important port only because it is the meeting point of a number of land routes.

The leather industry leads all others in Madras. Skins and hides represent more than half the value of the city's exports. Both raw cotton and cotton goods are also shipped from Madras. Hydro-electric power is brought from the Western Ghats.

Delhi and New Delhi. You can see on the map on page 356 that two cities, Delhi and New Delhi, stand very close together. New Delhi consists chiefly of government buildings and is the capital of India. Delhi has become an important trade centre, for it is located between the Ganges Valley and the Punjab. For what crops is each of these great areas noted? Delhi has benefited by its location on the route between Calcutta and the Khyber Pass. As a result of its central location, the city has become an important railway centre. Besides the usual handicraft industries, Delhi has cotton mills.

Karachi. Karachi is the capital of the new country of Pakistan. It is the closest subcontinent port to Europe, and handles most of the imports and exports of the northwest part of the subcontinent. Wheat and cotton are its chief exports.

Two city scenes in India. The photograph on the left is of a palace at Lucknow. At the right is a city street in Calcutta. Notice the cow wandering along the street.

Courtesy Information Service of India



Courtesy United Nations



THE GEOGRAPHY WORKSHOP

I. THE WAY TO INDIA

By great-eirele measurement on a globe, what part of Canada is nearest the eity of Calcutta? What part is nearest Bombay? If you were to fly from your home to Ceylon by the shortest route, what eountries would you eross? In whieh direction would you start?

II. THE WORLD IN YOUR COMMUNITY

Our oldest relationship with the people of the Indo-Pakistan subeontinent is through our language. In aneient times a people moved into the subeontinent from the plateaus of Iran. Every student of the language we speak is interested in those people. Their language was Sanskrit. It belonged to the Indo-European family of languages. English and nearly all other European languages belong to this family. So also do most of the languages spoken in the subcontinent.

The oldest books in any Indo-European language are in Sanskrit. If you saw a list of words from these books, you would find in many of them a faint resemblanee to English words. If you wish, you can find some Sanskrit words by looking up eertain English words in an unabridged dietionary. Try the following words: father, brother, star, cow, milk. The dictionary lists related words in other languages. The ones marked (Skr.) are in Sanskrit.

There is one imaginary Indian boy you will want to meet. He is Mowgli, the hero of *The Jungle Book*, by Rudyard Kipling. In that book you will meet people and animals of India.

III. WHAT WE GET FROM INDIA

Canadians do not import as many things from India, Pakistan, and Ceylon as from some of the other regions you have studied. We import eowhides and sheepskins, but you eannot tell whether or not your shoes are made of leather from India. Manganese is imported for our steel mills, and miea and shellae are other imports, but you eannot use them for an exhibit.

You should be able to make a small exhibit of foods from the subeontinent. Mueh of the tea used in Canada eomes from India, Pakistan, and Ceylon.

Your exhibit will not be large, but you ean add to its interest with a pieee of burlap. As you know, burlap, or jute fibre from whieh it is made, eomes from the subeontinent. Use a piece of burlap as a baekground for your exhibit or as a eover for the table. On it paint Indo-Pakistan designs with poster eolors. Look for examples in pictures in books and magazines.

IV. A MAP TO MAKE

Traee an outline map of India, Pakistan, and Ceylon from the map on page 356. Using the map on page 337, show in eolor where riee is grown in these eountries. Using the map on page 344, show by another eolor where wheat is produeed. You need put on your map only the areas of heavy produetion.

Compare your map with other maps in this book. List all the differences you ean find between the areas of wheat produetion and the areas of riee produetion.

V. POPULATION

Whieh of the following faets about the Indo-Pakistan subcontinent help to answer the question: What natural eonditions make it possible for sueh a large population to live in the Indo-Pakistan subeontinent? Remember that most of the people of the subeontinent are farmers.

1. Much land is suited to the growing of rice, which produces the most food per acre.
2. In the most densely populated areas, such as the lower Ganges Valley, the land is level and the soil is fertile.
3. Parts of the subcontinent have many people, others have few people.
4. May is usually the hottest month in most of India.
5. Most farm work is done with primitive tools.
6. There are many rivers that supply water for irrigation.
7. The subcontinent has more cattle than any other country.
8. Because of the warm climate, both winter and summer crops can be grown in the subcontinent.
9. Farmers live in crowded villages.
10. Sometimes the rains come too late to save the crops.

VI. PICTURES TO SORT

Imagine you have ten pictures of products that are piled on the wharves of a seaport in the Indo-Pakistan subcontinent. The photographer forgot to indicate which ones had just been taken off ships. Can you help him sort them?

1. Hand-woven carpets and shawls
2. Crated automobiles
3. A dredge for digging irrigation canals
4. Bales of cowhides
5. Rolls of burlap
6. Machines for cotton mills
7. Boxes of tea
8. Bales of jute fibre
9. Bales of cotton
10. Bags of sugar

VII. NEWS FROM INDIA, PAKISTAN, AND CEYLON

People used to speak of "unchanging India." Watch for news that indicates that the Indo-Pakistan subcontinent is no longer unchanging. The people have many problems to solve, from finding how to produce enough food for everyone, to getting a kind of government that is satisfactory for all groups. Watch for news about how they solve their problems.

Small native boats are drawn up on the beach in Ceylon. The luxuriant growth of coconut palms, extending inland from the beach, is a common sight along rainy tropical coasts like this one.

Fritz Henle





SOUTHEASTERN ASIA

Look at the shaded area on the map on this page to see how scattered the various parts of southeastern Asia are. A broad peninsula juts southward from China. From this peninsula extends another peninsula—a long, narrow one that stretches south almost as far as the equator. And to the south and east of the two peninsulas are sprinkled thousands of islands, some as big as Great Britain and some as small as a city block.

The nature of the jungle. Except on the very high mountains, southeastern Asia is a land of constant summer. The whole year of summer is divided into only two seasons — a wet season and a dry season. Southeastern Asia is in the monsoon region. During the wet season, in most of the region, the earth is so thoroughly drenched that it never dries out completely. In a climate so warm and moist, plants grow very rapidly. In only three or four years trees in the jungle grow as big as large trees in Canada.

There are jungles of bamboo where plants grow so thick that a man cannot travel through them without cutting a path as he goes, and there are dense, forested jungles where trailing vines hang from branches and cling to the trunks of trees. In some places the tops of giant trees form a leafy awning through which the sun cannot shine. The shadowy forest is damp and gloomy

even on the brightest days, and flowers and fruit are found only in treetops. Butterflies dart among the brilliantly colored blossoms, and the fruit attracts birds, insects, and climbing animals.

However, southeastern Asia is not one vast jungle. Wide fertile plains along the rivers are cultivated, in many places the land has been cleared for farms, and some mountain slopes are terraced. In places the land is drained, and elsewhere it is irrigated.

The French, Dutch, and British have established big plantations in southeastern Asia. Valuable tropical crops of the greatest variety are produced. Rubber, sugar, tea, and coffee are a few of the plantation crops.

WHAT WE CAN LEARN FROM MAPS

LOCATING SOUTHEASTERN ASIA

1. Southeastern Asia is darkened on the map on page 365. You have learned that it includes two peninsulas and hundreds of islands. Now turn to pages 304-305 and find this same area.

2. What are the names of the countries on the mainland of southeastern Asia? Which country helps to separate India from China?

3. Does Thailand touch China? About how much farther south than Burma does it extend? It has coastlines on both the Indian Ocean and the South China Sea, because it includes a part of the Malay Peninsula. About how wide is the peninsula at the narrowest point? What country occupies the end of the Malay Peninsula? Color the part of your outline map of Asia that shows southeastern Asia. Include all the islands as well as the mainland countries. Now print the names Burma, Laos, Cambodia, Vietnam, Thailand, and Malaya in the correct places on your outline map. Vietnam, Laos, and Cambodia, together, are called Indochina.

4. There are two island countries southeast of Asia: the Republic of the Philippines and the United States of Indonesia. These countries and several island possessions make up the East Indies. Turn to the map of the Pacific Ocean on pages 390-391 and find the islands of Indonesia. You should be able to recognize on the map five islands: Sumatra, Java, Borneo, Celebes, and New Guinea. Print these names on your outline map of Asia. The two largest islands of the Philippines are Luzon and Mindanao. Add these names to your outline map.

In southeastern Asia large, powerful elephants are often used in teak lumbering. This one is lifting a dry teak log.

Ewing Galloway



SURFACE, CLIMATE, AND PEOPLE

1. Turn to the physical-political map and notice the

mountain ranges of continental southeastern Asia. They extend north and south, and between them lie great river valleys. Does the altitude in general increase or decrease from north to south? In what direction would it be easiest to travel?

2. Most of the lowlands in these countries are made of mud and sand deposited by rivers. What river flows through the lowlands in Burma? What great river has its source in the Plateau of Tibet and its mouth in Vietnam? You can see that these rivers have built large delta plains. In Burma the people live chiefly along the Irrawaddy River. In Thailand they live in the wide valley of the Menam River. And in Indochina the two most thickly settled areas are the delta lands of the Mekong and a narrow coastal plain in the east. What is the density of population in each of the deltas? There are no great river valleys in Malaya. What part of the Malay Peninsula is most densely populated?

3. Look again at the physical-political map and follow the Tropic of Cancer across Asia. What part of southeastern Asia lies south of this line? What length of growing season is suggested by this location? Check your answer with the map on pages 10-11. Turn to the map on pages 8-9 to see what the rainfall of most of southeastern Asia is. What parts of India have a similar amount of rain? What part of China has a similar amount? Notice that a few places have less rain. These are places protected from monsoons by mountains.

4. Look at the population map on pages 14-15. Are the continental countries of southeastern Asia more or less densely populated than India? What large island in Indonesia has a very dense population? What two large islands in Indonesia have a very sparse population? On which island in the Philippines do most of the people live? Which of the islands has a very sparse population?

LANDS AND PEOPLES OF THE PENINSULAS

Southeastern Asia is shut off from India by a mountain range that extends southward from the Himalayas to the Bay of Bengal. These mountains have very few passes. Find this range on the physical-political map. Many large streams of southeastern Asia flow southward through deep canyons separated by narrow, rugged divides. These mountains and canyons, combined with the dense jungles, make the building of roads difficult for engineers and workers. There are only a very few roads, such as the Burma Road, joining this region with India and the other countries of the East.

The people of southeastern Asia make good use of waterways. Often it is easier to reach a neighboring country by water than by land. The population is densest along river valleys and near the coasts. The people send most of their products to market by river, and at the water front they receive needed supplies. There are very few railways in southeastern Asia.

COMMERCIAL PRODUCTS

The peninsulas of southeastern Asia are important sources of raw materials and food products. They are not as densely populated as the other eastern countries you have studied, and so are able to produce large surpluses of food and raw materials to ship to the industrial countries of middle latitudes and to neighboring countries that need additional food.

Growth of the rubber industry. The rubber industry is rather new in southeastern Asia, but this region has succeeded



Map showing the rubber-producing regions of Asia.

in taking Brazil's place as the leading supplier of the world's rubber.

The natural environment of southeastern Asia is an excellent one for growing rubber trees. Year-round high temperatures and abundant rainfall speed the growth of the trees. Cheap labor has also helped the growth of the rubber industry. Plantations were started on low coastal plains and rolling hills where the soil was fertile and well-drained.

The expanding automobile industry created a great demand for rubber, and more and more plantations were started. Southeastern Asia as a whole produces more than ninety per cent of the world's supply of natural rubber. Look at the map on this page to see where the plantations are situated.

Rice to sell. We have seen that all tropical monsoon lands grow rice. Although China, India, and Japan lead the world in the production of rice, they have none to sell to other countries. Indeed, they usually import large quantities of rice each year. Burma, Thailand, and Indochina are much less densely populated than are the countries of eastern Asia. On their warm, wet lowlands, each of these countries grows enough rice to supply the needs of its own people and also to have large quantities left for export. Only Malaya must import rice. Rice is the chief product of these countries.

Teak lumbering. On the low, hilly lands of southeastern Asia grows a broadleaf tree that provides a very valuable wood called teak. It contains an oil that helps to prevent its warping or rotting in damp weather or in water. It resists attacks of termites and does not burn easily. Because of these qualities, teakwood is especially good for shipbuilding and for building wharves and piers. In moist climates, it is also used for making furniture. Teak is a major export of both Burma and Thailand, and it is also exported from other parts of southeastern Asia.

The government officials in Burma choose and mark trees to be cut. Similar conservation is practised in Thailand and other places. To increase the supply of teak, plantations have been started. It takes at least eighty years for a tree to reach maturity. Many of the trees are over 200 years old.

Oil and tin. Burma has large oil deposits in the central part of the Irrawaddy Valley. There, the land is covered with oil derricks. The oil is transported from the oil fields through pipelines to refineries near Rangoon. From there, much of it is exported.

A large part of all the tin mined in the world comes from southeastern Asia. Malaya and Thailand together produce over half the world's supply. The largest deposits are found in Malaya, which ranks first in production. Tin is used to coat food cans because it resists the acids in food and is non-poisonous.

SEAPORTS AND CAPITALS

Turn to the physical-political map to see where the largest cities of the peninsulas are located. Since you know that this is a region interested in trade rather than manufacturing, you can understand why the largest

cities are seaports. They are also centres of government. Use the map on pages 304-305 to find one reason why the locations of these cities make them suitable for capitals.

Rangoon. Rangoon, near the mouth of the Irrawaddy River, is the capital and chief seaport of Burma. Much of the business carried on in Rangoon depends on river traffic. Although it is not located on the Irrawaddy itself, Rangoon is connected with that great river by a canal. In the city's large mills, rice is cleaned and polished for export, for Rangoon is one of the greatest rice markets in the world. Elephants work piling up teakwood logs that have been floated on rafts down the Irrawaddy from the forests of northern Burma. Oil piped from the north is also shipped out from there.

Bangkok. Turn to the map and find Bangkok, the capital and largest city of Thailand. You can see that Bangkok, like Rangoon, grew up near the mouth of a river. The Menam River is thronged with boats that bring farm produce and passengers from northern Thailand. For many years the Menam was the main street of Bangkok.

Hanoi. Hanoi is a small city. Turn back to the physical-political map to see how far from the coast it is. Through this port are exported rice and silk.

Singapore, where sea routes meet. Find the Strait of Malacca on the map. It leads from the South China Sea to the Indian Ocean and is the gateway between eastern

One of the old business streets in Bangkok. On this crowded, busy canal people barter and sell their farm products from sampans. The canal is one of many waterways that connect with the Menam River.

De Cou from Ewing Galloway



and western Asian countries. On a hilly tree-covered island near the southern tip of the Malay Peninsula stands Singapore. Ships find this port a convenient place to stop, for it is a free port; no duties or taxes are charged there on imports and exports. Hundreds of small boats from neighboring islands and countries bring cargoes to be reshipped from Singapore on larger boats. Behind it lie regions rich in rubber and tin that send their products to Singapore to be loaded on the ships there.

LIVING IN THE EAST INDIES AND THE PHILIPPINES

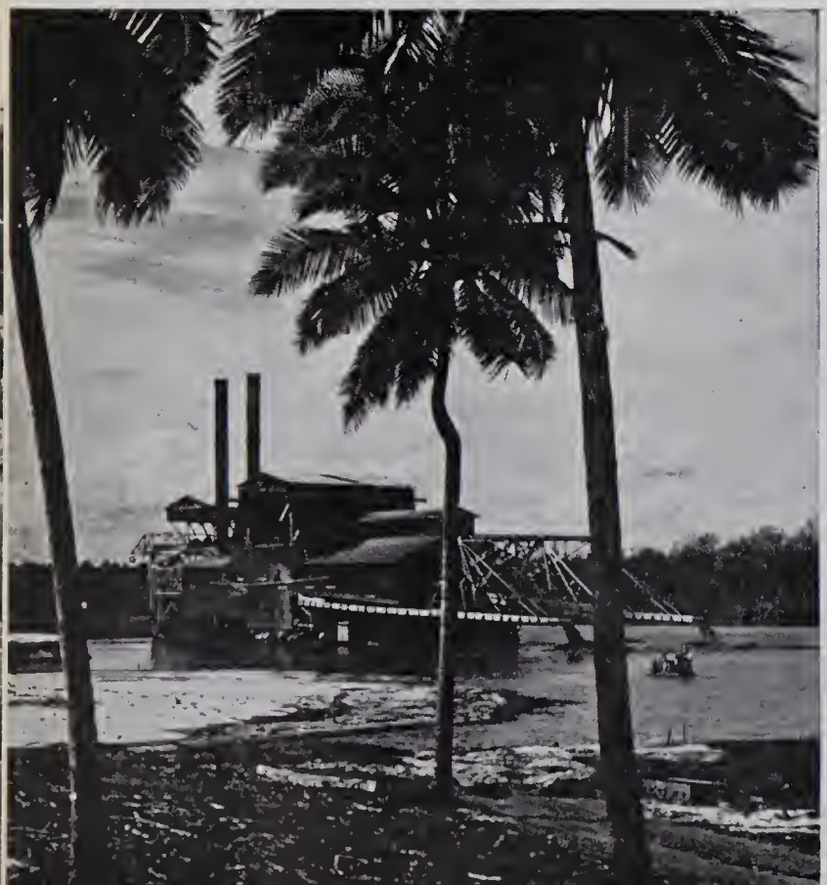
The islands of the East Indies stretch eastward for thousands of miles. Some of them are large; New Guinea and Borneo are the second- and third-largest islands in the world. Others are so small that they are not shown on your map.

THE ISLANDS OF INDONESIA

Do you remember what islands are included in the United States of Indonesia? Java, Sumatra, Celebes, most of Borneo, about half of New Guinea, and many smaller islands make up this group. The distance between its western and eastern boundaries is over half the distance between our Pacific and Atlantic coasts. The climate is hot and moist, but the mountainous regions are comfortably cool, for the average temperature decreases about one degree for every 330 feet of altitude. Find out to whom the eastern half of New Guinea and the northern part of Borneo belong.

In this mine tin ore is dredged from the river.

Courtesy Netherlands Information Bureau



Living in jungle and village. Ways of living vary from island to island and from district to district. Some of the people live much as we do, but in the vine-covered, tangled jungles, ways of living are almost the same as they were in prehistoric days. The less civilized are hunters and food gatherers. They hunt with spears, bows and arrows, and even blowpipes with poisoned darts. They wander about constantly in search of food, and they sleep in shelters made of sticks and leaves.

However, most of the people of the Indonesian islands live in small villages. The farmers who burn out clearings in which to farm move every few years because the soil loses its fertility. Those who irrigate their fields live in permanent villages. The houses are usually simple. There is a picture of some Indonesian houses on page 371. Some are built on the ground. Others are built on raised platforms because of the damp climate. Farm animals find shelter beneath them.

There is little industry in the islands. Most of the people farm. Rice is the main dish in the natives' diet, but many vegetables are eaten, too. Much more fish than meat is eaten.

Most of the heavy work is done by water buffaloes. Methods of travel and transportation are changing wherever good autombile roads and railways have been built, but in the more remote districts carts are drawn by buffaloes, and most of the people walk.

Java, richest island of the East Indies. Imagine an island about the size of the Atlantic Provinces. Now try to imagine almost four times as many people as live in all Canada crowded into that island. There you have a picture of densely-populated Java, where almost half of all the people of the East Indies live. When you realize that part of the land is too mountainous to be used for farming, and that swamplands bordering the coast are covered with dense tropical jungles, you can see how crowded the better parts of the island must be.

In Java, almost every possible acre of land has been cultivated, from sea level to altitudes of 4000 feet. Fortunately rich volcanic soils, many streams for irrigation, and a year-round growing season enable the people of Java to produce enough food for themselves.

Highways and railways connect the different parts of the island. Even in the more remote corners of Java, where transportation has not yet been developed, villages are linked with one another by roads.

Sumatra, another productive island. Sumatra sprawls across the equator, with tropical sunshine beaming down on its dark-green forests and monsoon rains drenching its mountain sides. In the west the mountains crowd the narrow coastal plain, but in the east gentle slopes and foothills gradually merge into swamps and marshes.

Sumatra is much less densely populated than Java. The largest groups of people live in regions where there is volcanic soil, but much of the island is still heavily wooded jungle land. From these forests come huge supplies of teakwood and bamboo. The natives fish and grow rice. Many of them work on great plantations supervised by Europeans. Sumatra has many different minerals. A third of all the tin of Asia comes from two islands near its eastern coast. Sumatra's most valuable mineral is oil.

Native and plantation crops. Two kinds of farming are carried on in most of the islands of Indonesia — native farming and plantation farming. You already know what the leading native crop is. In addition to rice, products such as corn, sweet potatoes, bananas, and tobacco are grown in gardens. Fields are so small that machinery cannot be used, and farmers do all their work by hand.

In Java grows the *kapok* tree, which provides the downy stuffing used in such things as life jackets, cushions, and mattresses.

Before World War II, the leading cash crop of Indonesia was rubber. The industry was developed in the islands by the Dutch, much as it was developed on the Malayan peninsula by the British. Most of the rubber was produced in Sumatra. Turn to the map on page 368 to see which Indonesian island produces the most rubber.

Java has long been a producer of sugar cane. The carefully tended plantations yield

A street in a village in Indonesia.

Deane Dickason from Ewing Galloway





Courtesy K. P. M. Lines

A paved highway runs past this flooded field, where workers are planting by hand small bunches of rice shoots.

large crops, and much sugar is sold to the other countries of southeastern Asia and to Europe. Almost as important as sugar is tea. In Java it is grown on the steep mountain sides in the western part of the island. In Sumatra, tea plantations were started in the northeast.

At one time a large part of the coffee supply of the world came from Indonesia, but disease and insects all but destroyed the industry there, and Brazil took the lead in coffee production. A disease-resistant coffee tree has been developed, and coffee is now grown on mountain slopes in Java and in Sumatra where there is a dry season long enough to harvest and dry the beans.

Quinine is obtained from the bark of the cinchona tree. Originally the cinchona tree, like the rubber tree, grew in South America. The Dutch started cinchona plantations on the mountain slopes of Java, and now that island provides a large part of the world's supply of quinine.

The islands of Indonesia are the greatest producers of copra. Copra is the dried meat of the coconut. It is a source of an oil that is used in food products and in making soap. Another source of oil is the fruit of the oil palm. Like the coconut palm, the oil palm needs a hot, moist climate. But, unlike the coconut palm, the oil palm grows in the inland parts of the islands as well as along the coast.

Other islands in Indonesia. Borneo, Celebes, and New Guinea are neither so important nor so densely populated as Java and Sumatra. Chattering monkeys swing from branch to branch in the forest, and snakes slither silently over the deep moss.

Borneo has the richest oil field in the whole East Indies, and oil is the most important of its many different minerals. The valleys and rivers are the principal means of reaching the interior, for there are almost no roads.

Coffee is the most important cash crop of the island of Celebes. There are no railways there, and very few highways. Even the rivers are useless for transportation.

THE PHILIPPINE ISLANDS

The Philippines are made up of more than seven thousand islands. Two-thirds of these are only tiny specks in the ocean, too small to be shown on the map. You have located Luzon and Mindanao on the physical-political map. Luzon is the largest and best-known of the islands. Mindanao is more sparsely populated, and much of it is still undeveloped.

A little more than four hundred years after the Spaniards took possession of the Philippines, the islands were captured by the United States. On July 4, 1946, the independence of the Philippine Islands was

formally declared and the Philippine Republic was established.

The Philippine Islands are mainly of volcanic origin. Like the islands of Japan and Indonesia, they are the tops of huge mountains that have been uplifted from the ocean bottom. Most of the land is rugged, but there are some level areas in the valleys and on the coastal lowlands. Some of the land in the Philippines is too rough and steep for farming, but there are many lowlands where the soil formed from decayed volcanic rocks is deep and fertile. Much of the hilly land has been terraced.

What the islands are like. No part of the Philippines lies more than twenty degrees north of the equator, and the islands have a warm climate all the year. Like all lands in southeastern Asia, they have a monsoon climate, and so they have a rainy season and a dry season.

Most of the 21,000,000 people in the Philippine Islands live on the fertile lowlands of Luzon, especially in and around the city of Manila. Find this region on the physical-political map. Thousands of Chinese have gone to the Philippines, most of them as traders and storekeepers, and many Japanese have migrated to the islands.

Vegetation in the Philippine Islands is as varied as it is in the islands of Indonesia. The mountains and many of the lowlands are covered with tropical forests that provide much valuable rubber.

Most of the natives live in houses like those in the picture on page 371. Rice is their chief food. They use more land for growing rice than for any other purpose, and yet they import large quantities from other countries.

Raising products to sell. Many of the Philippine farmers produce cash crops. Sugar cane, the most important crop, is grown chiefly in Luzon. The great central plain extending north from Manila Bay has rich volcanic soils, a long, warm, wet growing season, and a dry harvesting season — ideal conditions for growing sugar cane.



Wide World Photo

A Malayan girl taps a rubber tree. The sap from the tree will run into the cup attached to the tree.

Abacá is another important crop. The stem yields fibres that are long and strong and do not get hard or stiff when they are wet. These fibres have been given the name Manila hemp. Because of their strength and because they resist water so well, most of the fibres are used for making rope. The Philippine Islands produce almost all the world's supply of Manila hemp.

Coconuts are raised in great quantities, especially on the low wet coastal lands. Many are grown on big plantations, situated on sandy beaches or on stony slopes where the roots of the plant can get plenty of water.

Manila, a great capital city. Manila is the only large city in the Philippine Islands. In fact, it is the largest city in the East

Indies. Its excellent harbor helped it to become a trade centre. Not far from Manila are the most productive farm lands of Luzon. To this port come ships from all parts of the world to take on cargoes of sugar, copra, hemp, and tobacco.

THE GEOGRAPHY WORKSHOP

I. CANADA AND SOUTHEASTERN ASIA

By a great-circle route, what part of southeastern Asia is nearest your home? Name some other place you have studied that is about the same distance away.

Which of the Canadian provinces is nearest the north tip of Luzon? Which province is nearest the eastern tip of the island of New Guinea?

II. THE WORLD IN YOUR COMMUNITY

Canadians have had many contacts with southeastern Asia. Many of the lands, like Malaya, northern Borneo, and eastern New Guinea, belong to the British Empire, and offer special advantages to the Dominions for trading there. They need Canadian machinery and automobiles, and Canada needs their rubber, tin, and vegetable oils and fibres.

Abacá growing on a hemp plantation in the Philippines.

Courtesy Bataan Magazine



Members of your class may know someone who has visited Malaya on business or for pleasure. Some Canadian soldiers, sailors, and airmen have been in southeastern Asia. If anyone in your community has been in that part of the world, ask him to tell you about his experiences.

You have read about many kinds of goods brought to Canada from southeastern Asia. Make a list of these goods and the countries from which they came. You cannot very well collect such imports for an exhibit. If you have a piece of rope made of Manila hemp, you can be almost sure the fibre came from the Philippines. Tin, sugar, rubber, coconut oil, or coconut fibre might have come from southeastern Asia.

When Japan over-ran southeastern Asia in World War II, many Canadians realized for the first time how much we depended on the rubber and tin of that region. How has the growth of Sarnia, Ontario, been affected by the need for obtaining a substitute for the rubber of southeastern Asia?

III. CAN YOU IDENTIFY THESE PLACES?

What land is described in each of the following paragraphs? One of them is not in southeastern Asia, but you know it well.

1. A country that has both densely and sparsely populated regions. Large areas are covered with dense forests. Much rice is grown, but additional supplies are imported. Sugar, hemp, and copra are produced for export. The capital of this country is one of the large cities in southeastern Asia.

2. This is one of the most densely populated countries in the world. Most of the people are subsistence farmers. Rice is

grown wherever there is enough water. In the northwestern part of the country the farmers grow wheat. Cotton is grown in a very dry region. Much sugar is produced, but none is exported.

3. A very densely populated land. There is a mountain range in the southern part. The slopes are cultivated because they have rich volcanic soil. Sugar, tea, coffee, quinine, copra, palm oil, and kapok are produced for export. Transportation is better than in most lands of southeastern Asia.

4. A country that is not densely populated. Most of its people are farmers. They grow enough rice for themselves and also export vast quantities. Much of the land is rugged and covered with forests. One valuable forest tree is also grown on plantations. Elephants are used in handling timber.

IV. WHAT YOU CAN READ FROM PICTURES

The picture below was taken in southeastern Asia. With all you now know about geography, you should be able to read a great deal from it at a single glance.

1. How can you tell that the picture shows the slope of a wide valley?

2. What have the farmers done to secure more land for farming? Is the land intensively cultivated? Do you think the picture was taken in a densely or a sparsely populated region? Why?

3. How can you tell what crop is being grown on most of the land?

4. Where do you find banana plants and coconut palms in the picture?

5. The following sentences are taken from the pages you have just read. They describe the part of southeastern Asia where the picture was taken. Where is it?

"Almost every possible acre of land has been cultivated."

"Rich volcanic soils, many streams for irrigation, and a year-round growing season enable the people . . . to produce enough food for themselves."

"Imagine an island about the size of the Atlantic Provinces. Now try to imagine almost four times as many people as live in all Canada crowded into that island."

V. SOUTHEASTERN ASIA IN THE NEWS

During World War II fighting went on in nearly every part of southeastern Asia. Plantation trees were cut down, tin smelters and oil refineries were destroyed, and seaports were wrecked. The people will be many years building up what has been destroyed. Watch your newspapers and magazines to learn about their progress.

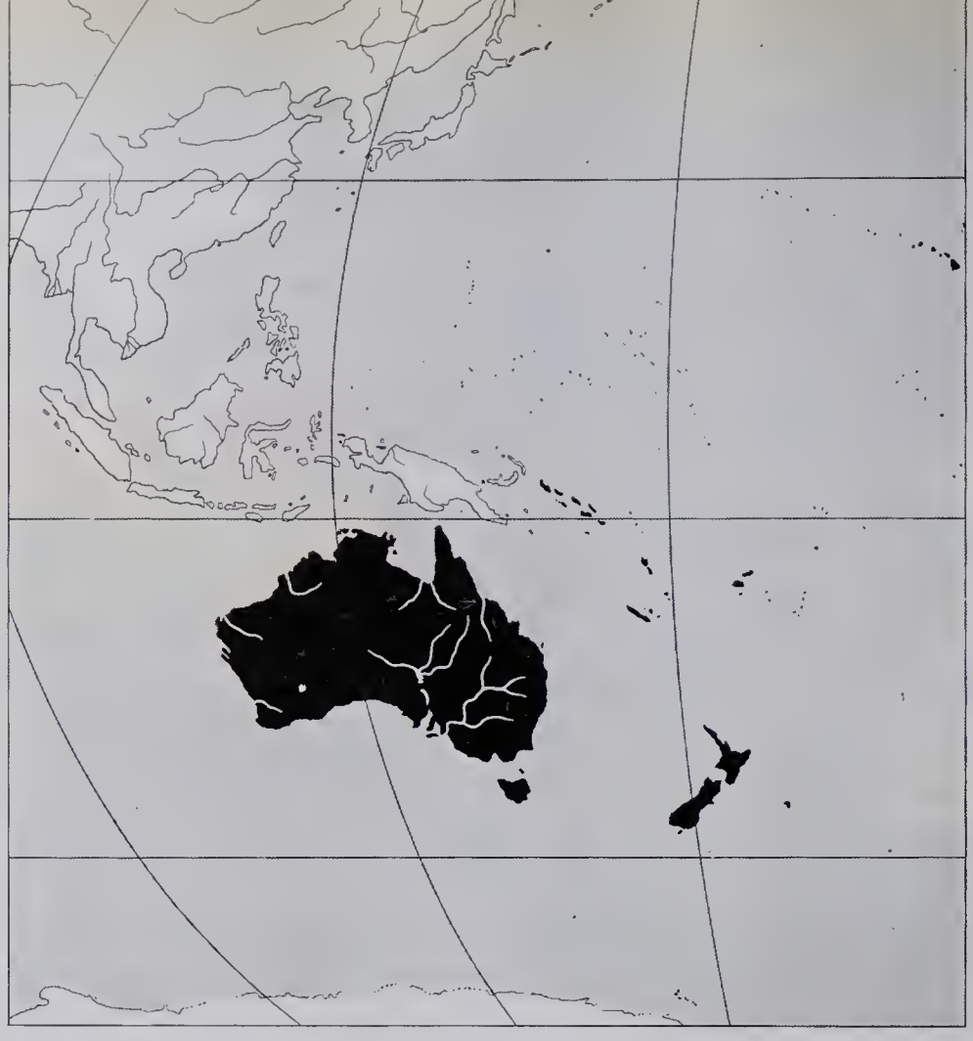
Look through your newspapers for date lines that name cities in southeastern Asia. What do the articles add to your information about the cities?

Courtesy Netherlands Information Bureau




100°
110°
120°
130°
140°
10°
0°
10°
20°
30°
40°
90°
100°
110°
120°
130°
140°
Gulf of Siam
South China Sea
PHILIPPINES
NORTH BORNEO
BRUNEI
MALAY PENINSULA
SARAWAK
Celebes Sea
HALMAHERA
SUMATRA
Singapore
BORNEO
CELEBES
CERAM
Mount Carstensz
NEW
Java Sea
INDONESIA
Jakarta
JAVA
TIMOR
Timor Sea
CHRISTMAS ISLAND
COCOS ISLANDS
Darwin
Gulf of Carpentaria
NORTHERN TERRITORY
GREAT SANDY DESERT
North West Cape
WESTERN AUSTRALIA
Alice Springs
AUSTRALIA
GREAT VICTORIA DESERT
SOUTH AUSTRALIA
Kalgoorlie
Perth
Great Australian Bight
Adelaide
Indian Ocean


AUSTRALIA,
AND SOUTHWEST PACIFIC
Scale of Miles
0 100 200 400 600
National Capitals
State Capitals
Other Cities
Shading from green through yellow, brown, and red indicates increase in altitude. Figures show approximate altitude in feet for corresponding color.
10,000 ft.
5,000 ft.
2,000 ft.
1,000 ft.
500 ft.
150°
160°
170°
180°
10°
North Latitude
0°
South Latitude
10°
20°
30°
40°
Equator
AROLINE ISLANDS
BISMARCK ARCHIPELAGO
GUINEA
NEW BRITAIN
SOLOMON ISLANDS
Port Moresby
Cape York
ELLICE ISLANDS
SANTA CRUZ ISLANDS
GREAT BARRIER REEF
Coral Sea
BANKS ISLANDS
NEW HEBRIDES
SAMOA ISLANDS
FIJI ISLANDS
Townsville
DIVIDING RANGE
EENSLAND
NEW CALEDONIA
LOYALTY ISLANDS
Tropic of Capricorn
TONGA ISLANDS
Brisbane
Darling River
NEW SOUTH WALES
AUSTRALIAN ALPS
Newcastle
Sydney
Murray River
Canberra
VICTORIA
Mount Kosciusko
Melbourne
LORD HOWE ISLANDS
KERMADEC ISLANDS
North Cape
NORTH ISLAND
Tasman Sea
Auckland
NEW ZEALAND
Bass Strait
TASMANIA
Hobart
Wellington
Christchurch
SOUTH ISLAND
South Cape
East Longitude
West Longitude
377



AUSTRALIA AND THE PACIFIC ISLANDS

The only large body of inhabited land that lies wholly south of the equator is Australia, an island so large that it is called a continent. The other lands near Australia are also islands, but most of them are small. New Zealand, to the southeast, is about one-fourth the size of Ontario. The Hawaiian Islands, far away to the northeast, cover about half as many square miles as Vancouver Island. Thousands of other islands are scattered about in the great Pacific Ocean.

Australia's strange animals and plants. Early explorers were surprised to find many strange and unusual animals in Australia. The explorers saw animals with powerful hind legs and tails and short forelegs, which leaped along at a speed of as much as forty miles an hour. The young were carried in a pouch on the mother's body until they were strong enough to jump. These animals, of course, were kangeroos.

Other strange animals and birds make their home in Australia. There are soft,

furry koala bears that live on the leaves of the eucalyptus tree, the most valuable tree in Australian forests. There are dingoes, or wild dogs, that break the quiet of the night by long, mournful howling, and worry shepherds by attacking and killing sheep. There are big, drab birds called emus, that cannot fly, but make up for it by running swiftly across the plains. And there is the strangest animal of all, the duck-billed platypus, which has the characteristics of an animal, a fish, and a bird.

Eucalyptus trees cover the highlands of Australia. These trees shed their bark instead of their leaves; long ribbons of old, brown bark hang from the trunks, and underneath can be seen fresh, pale bark.

Picturesque New Zealand. New Zealand has a climate much like that of Great Britain. It has no barren deserts and unhealthy tropical forests and grasslands as Australia has, and so it is more densely populated. Nor has it the strange animals that Australia has.

New Zealand has, however, a wealth of picturesque scenery. Glaciers in the high mountains, and lakes and rivers teeming with fish attract visitors to the resort hotels. New Zealand has a volcanic region that is famous, for not many other places in the world have geysers and hot springs.

Differences in islands. The islands of the Pacific differ in a great many ways. Some are the tops of volcanoes that rest on the ocean floor. Others are low *coral* islands that have been formed by small sea animals called *coral polyps.* Billions of polyps live together in large colonies where the ocean is warm and shallow. They secrete a limey substance with which they build a shell-like framework around themselves. When the polyps die, the limey substance, which we call coral, remains. As the centuries pass, the colonies grow bigger and higher, till finally they reach the surface of the water. In this way coral islands are formed. When the coral is above water level, it breaks up to form coral sand.

Because the islands of the Pacific have different types of surfaces and soils, people use them in different ways. On volcanic islands the soil is rich, and plantation agriculture is often developed. Because coral sand dries out very quickly after a rain,

An artesian well in Australia. The water from this well flows over a hundred miles through surrounding estates.

Courtesy Australian News and Information Bureau



plantations are not usually found on the low coral islands. The most valuable plant on most coral islands is the coconut-palm tree. It flourishes on these islands because its long roots are able to reach water that is far below the surface of the ground. On these islands, as in other tropical regions you have studied, coconut palms supply not only food, but also material for clothing, shelter, and boats. Hundreds of the Pacific islands are only barren rocks where sea birds come to build their nests.

There are also many different types of native peoples living on these islands. Some of them were savage cannibals only a short time ago, and are not yet used to the ways of civilization. Others are quite civilized. Some of the natives are fishermen; they live on the coast and build their homes high above the water on poles. Others live inland in villages and grow fruit and vegetables in small gardens and hunt animals in the forest.

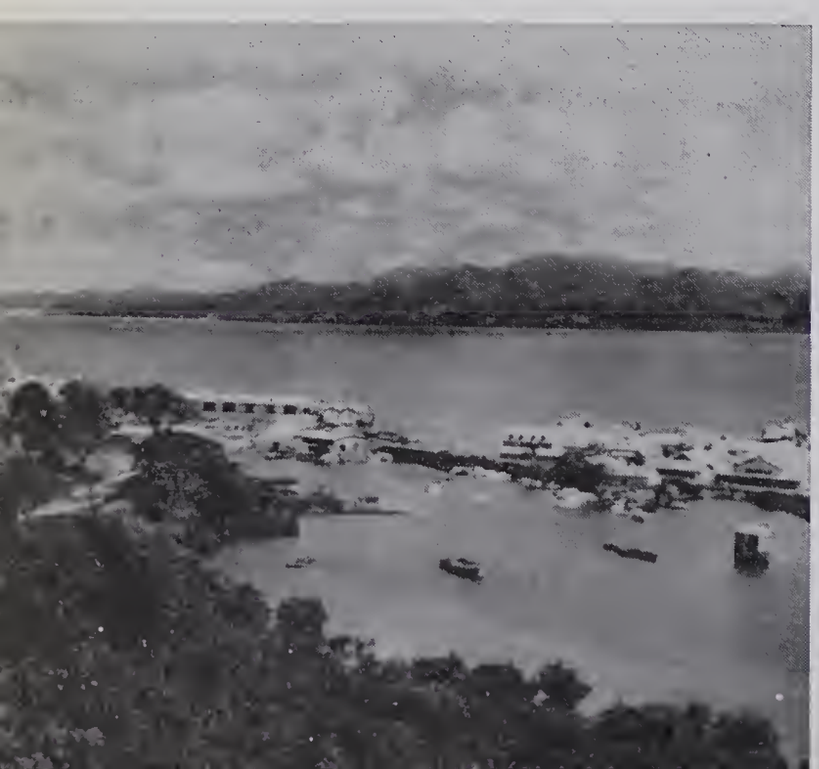
Increasing importance in world affairs. Once the Pacific was considered to be a great barrier separating North America from Asia. Today the Pacific is a highway of trade and travel connecting these continents. A few centuries ago, even Australia and New Zealand were given almost no attention, and the small scattered islands in the Pacific were thought to be of little or no value except as stations for supplying food and water to an occasional sailing ship.

Gradually, the more progressive nations of the world, seeking trade and markets, became interested in the Pacific islands. Today, Great Britain, France, and the United States own islands in the Pacific and are interested in developing trade routes across that ocean. Before World War II, Japanese power and influence extended far beyond the mainland of Japan because she controlled many of the islands.

Why are so many nations interested in these widely scattered and sparsely settled islands? When steamships began to cross the Pacific, the islands located along the sea lanes became very important as coaling stations. After the invention of the telegraph, they were needed as cable stations. Their importance increased with the invention of the radio and the airplane. Radio and cable stations, weather stations, fuelling stations, and airfields are now needed along the long routes that cross the Pacific in nearly every direction. In time of war the Pacific islands can be invaluable as a base for operations against the enemy.

Two types of Pacific islands. The island on the left is a volcanic island. Notice all the mountains. See how flat the land of the coral island on the right is.

Photos by Wide World Photos





WHAT WE CAN LEARN FROM MAPS

USING THE GLOBE

1. Hold the globe so that the Hawaiian Islands are on a level with your eyes. What large body of water occupies nearly all of the part of the world that you can see?

2. Find a meridian near the eastern edge of New Zealand. What is the longitude? What is the approximate difference in longitude between the British Isles and New Zealand? What is the great-circle distance from London to New Zealand? Are the British Isles halfway around the world from New Zealand?

3. On the globe, measure the shortest distance from Vancouver to the Philippines; to Tokyo; to Sydney, Australia. Which of these great-circle routes passes closest to the Hawaiian Islands?

4. Notice that Australia lies wholly south of the equator. What other continent lies wholly south of the equator? Name a Canadian city that is about the same distance north of the equator as Dunedin in New Zealand is south of the equator. Is any part of Australia about the same distance from the equator as the southern tip of Canada is?

5. As you have learned, lands that lie south of the equator have the seasons at opposite times from us. Which are the winter months in Australia? the summer months?

LOCATING THE ISLANDS

1. Locate Australia on an outline map of the Pacific Ocean and print its name in the correct place on the map. Now turn to the physical-political map on pages 377-378. You can see that Australia is made up of states. The island of Tasmania, to the south, is one of them. How many states are there? Add the name Tasmania to your outline map. Put in the names of the other states.

2. New Zealand is a separate country made up of islands. The two largest are North Island and South Island. Print the name New Zealand on your map.

3. Your outline map may not show all the islands you will read about in this unit, but you can place a dot for each in the approximate location and print its name as you read the following instructions.

Turn to the map on pages 377-378 and find the Solomon Islands, northeast of Australia. In what direction are they from New Guinea? Farther out in the South Pacific are the Samoan Islands. About how far are these islands from Australia?

Look at the map on pages 390-391. East of the Philippines are islands that are located at almost equal distances from each others across the Pacific. They are Guam, Wake, and Midway islands. About how many miles apart are they? At about what latitude are the Midway Islands? Does the location suggest a possible reason for this name? Notice that the Samoan Islands lie far to the south of the Midway Islands.

South and east of the Midway Islands you can see the chain of Hawaiian Islands. What direction are they from the Tropic of Cancer? Which is nearer Vancouver, the Midway Islands or the Hawaiian Islands?

SURFACE, CLIMATE, AND VEGETATION

1. Judging from the map on pages 376-377, would you say that Australia is a region largely of highlands or of lowlands? Find the range of mountains in the eastern part of the country. Mount Kosciusko, toward the south, is the highest mountain in this range. In which eastern state of Australia are the coastal plains widest? Most of western Australia is a rather low plateau. Is the surface of the plateau even or uneven? Where are the largest areas of lowland in New Zealand?



Courtesy Australian News and Information Bureau

A platypus. This strange creature lives only in Australia. It is a mammal that lays eggs and has the feet and bill of a duck.

2. Follow the coastline of Australia. There are some large indentations and peninsulas in it, but only a few good harbors. Some of the best are on the southeastern coast. There you will find the city of Sydney. This city has one of the best natural harbors in the world.

3. Find the Great Barrier Reef along the northeastern coast. A *reef* is a chain of rocks or a ridge of sand or coral in shallow water. The Great Barrier Reef is a coral reef made by coral polyps. Because of this reef, ships have difficulty in reaching Australia's northeastern coast. You see why it is called a barrier reef. For about how many miles along the coast does it extend? Since you know in what waters coral is found, can you suggest reasons why there is no such reef along the southeastern coast?

4. Australia is a continent with very few rivers. The Murray River, in the southeast, is the longest and largest. Turn to the map on pages 376-377 and find the Murray Basin. Do you think the Murray River is of use to a large or a small part of the country? In what general direction does it flow? Notice that it rises near the Pacific Ocean and empties into an arm of the Indian Ocean.

5. What part of Australia is in the tropics? Is any part in high latitudes? Explain your answer. If you were to travel northward in Australia, would you expect to find the climate growing warmer or cooler? Which part of Australia has a growing season of the same length as that of South Island?

6. Most of Australia lies in the path of the southeast trade winds. By looking at the rainfall map and the physical-political map of Australia, you should be able to explain the heavy rainfall along the eastern coast. How does the location of the highlands help to give most of the continent an unfavorable climate? New Zealand is in the belt of the westerly winds. Which side of the islands has the heavier rainfall?

7. On the vegetation map find the forest regions of Australia. What does the rainfall map tell you about these regions? In the northeast, where the climate is hot and wet, the tropical rain forest is like that along the Congo River in Africa. Southward, along the east and west coasts of Australia, the forests are more like those of other temperate lands. Find the areas of grassland. The rainfall map shows you that grasslands are found where there is enough rain for scattered trees. Now find the desert lands. Has Africa a desert in the same latitude? Compare the latitude of the desert of Australia with that of the Sahara.

WHERE THE PEOPLE LIVE

1. What part of Australia has the densest population? Why do so few people live in the interior? Use any maps that are necessary to help you to answer these questions.

2. About half the people of Australia live in five of the largest cities. Where in Australia would you say most of the large cities are located? Turn to the physical-political map to check your answer.

3. Which part of Australia has a population density similar to that of New Zealand?

LIVING IN AUSTRALIA AND NEW ZEALAND

While European nations were colonizing lands in the Americas, in Asia, and in Africa, Australia was still a vast, unknown land, unexplored and empty except for primitive native tribes. Being far from the early routes of trade and travel, Australia was not discovered by European explorers until early in the seventeenth century, when Captain Cook took possession of the eastern coast for England, and it was not until long after this that settlers came in any number to this land. Today, nearly all the Australians are descendents of people from the British Isles. The New Zealanders, too, are mostly of British ancestry. Like Canada, India, and South Africa, Australia and New Zealand are self-governing Dominions of the Commonwealth of Nations.

You have studied some countries crowded with people. In Egypt, India, China, Japan, and Java, millions of people toil day in and day out on small patches of land to make a bare living. But in Australia the population is very sparse, and there is little intensive farming. Most of the people live near the coasts, where the rainfall is plentiful. The southeastern part of the continent is the most heavily populated. Vast tracts of dry lands in the interior and tropical forests in the north are uninhabited. Explain why this is so. Much of Australia is still what might be called pioneer country.

FLOCKS AND HERDS

Australia and New Zealand are commercial grazing countries. They are important sources of the world's supply of meat, hides, and dairy products; and Australia is the world's leading exporter of wool. Millions of sheep and cattle graze the year round on broad, rolling pastures.

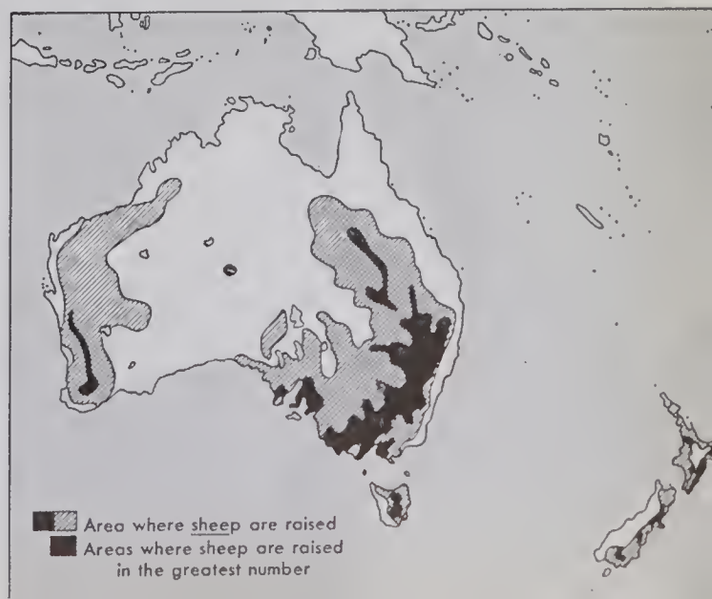
The importance of sheep in Australia. When settlers arrived in Australia they had to find some commodity needed by the rest of the world that could be shipped easily over long distances and which could be produced easily in Australia. Wool was the obvious answer.

If you were to visit the docks at Sydney or Melbourne, you would see huge warehouses used for storing wool for export. In the spring, just after the sheep are sheared, these warehouses are filled with bales of wool wrapped in burlap and stacked in long rows. Buyers examine samples carefully and make notes as to quality. Then they attend auction sales and buy the wool that suits their needs.

Most of the wool buyers are from England and Scotland, but usually there are also some from France, Belgium, the United States, Japan, and Germany. The auctions are important to the people of Australia, for the sale of wool helps to provide the

Maps showing where wheat and sheep are raised in Australia





foreign money with which Australia pays for imported goods, and because sheep ranching provides a living for many Australians.

Wool is not the only export that comes from sheep ranches. Each year Australia exports millions of pounds of *mutton,* chiefly to England. As soon as the sheep are slaughtered, the mutton is frozen, wrapped in thin cloth, and loaded onto refrigerator ships. Before the invention of refrigeration no meat was shipped out of Australia, of course, because it would go bad on the long, hot trip to market.

Climate and sheep. The map on page 383 shows that most of Australia's sheep are found in the southeastern part of the continent, and to a lesser extent in the southwest, but that none are kept along the east coast. How does the rainfall map help to explain why there are no sheep in central Australia? The climate in northern Australia is so hot that sheep there do not grow a thick fleece of wool. Moreover, some parts of northeastern Australia are covered with tropical forests. Even if the land were cleared, the sheep would suffer from diseases in the hot, wet region.

By comparing the map on page 383 with the rainfall map, you can see that most of the sheep in Australia are raised where the rainfall is more than 10 inches a year. Sheep can live on rather dry lands, but the rainfall has a great influence upon the number that can be grazed. For example, if a region has only 10 inches of rainfall a year, each square mile of its pastures can supply food for only a few sheep. If, on the other hand, the rainfall is 20 inches a year, each square mile of pasture will supply enough food for one hundred to two hundred sheep. You can see that when there is good land available it would not pay a herdsman to keep sheep on lands that have an annual rainfall of less than 10 inches. Another reason why sheep are not kept on much of the drier land is the danger of drought. If the usual

A drover with a flock of sheep on an 8000-acre sheep station near Canberra. In the background is the station homestead.

Courtesy Australian News and Information Bureau



amount of rain did not fall, millions of animals would die. This has happened.

East of the mountains, it is not difficult to get water. Dams are built across the many small streams to make little reservoirs. But in the drier lands west of the mountains it is a real problem to find enough water for people and animals. Fortunately, one of the largest basins of underground water in the world underlies part of the dry western plains. When wells are drilled down to these basins, the water there is forced up by pressure to the surface, where it gushes out in a steady stream. Such wells are called *artesian wells*. In other places, the water must be pumped to the surface and into storage tanks. This underground water contains many minerals, and people seldom drink it or water their gardens with it, but it is suitable for livestock. Often it is distributed by ditches to distant dry creek beds to supply sheep and cattle stations.

Sheep stations. A sheep station is a large ranch containing thousands of acres of land. In the rainier parts of Australia the stations are fenced into fields, but it does not pay to build fences in the drier parts because the sheep must graze over such vast areas of scanty pasture to obtain enough food. In the unfenced parts, the sheep are under the care of shepherds who ride on horses and are helped by their "kelpies," or Australian sheep dogs.

The wide, spacious pastures are lonely, but the sheep station itself is like a small village. Most of the owners live on their sheep station in large, comfortable homes. Grouped around the owner's home are houses for the workers, and stores, machine shops, stables, and sometimes even a post office and a telegraph station.

Shearing time is a busy season at a sheep station. Expert shearers are brought in to do the work. Shearing is done in late winter or early spring. The men who shear the sheep start working in the north and work their way south with the warmer weather.

Cattle in the tropical grasslands. In Australia, cattle are raised on lands that are not suitable for sheep. For much of the year, the climate in the northern part of the continent is warm and moist — an unhealthy place for sheep. Like the Sudan in Africa, it is a region of tropical grasslands. One season is hot and rainy, the other is mild and dry. The grass is coarse and tough, but it makes fairly good pasture for beef cattle.

Cattle stations, like sheep stations, cover thousands of acres and are miles and miles apart. Because there are few roads or railways, herds of cattle must be driven across lonely stretches of country to city markets. Often cowboys drive herds to the nearest railway station for shipment, but sometimes cattle travel the entire distance "on the hoof." Where there is no surface water, the government has had artesian wells sunk to provide water. Large numbers of cattle are shipped over railways to packing plants on the coast. There the beef is chilled or frozen. Then it is shipped to Great Britain and to various tropical countries near Australia. Many cattle hides are also exported.

Dairy farms. Dairy cattle are raised in the more densely populated sections where heavy rains and rich soil provide nourishing pastures. Dairy cattle, of course, need better pasture than do beef cattle. The dairy industry is located in the coastal areas of Queensland, New South Wales, and Victoria, near the large markets and ports.

The Australians use only about one-fifth of the milk produced; the rest is made into butter, cheese, and condensed milk. Large quantities of these products are exported each year.

New Zealand, a land of pastures. Today New Zealand is also one of the world's leading sheep-raising countries, even though it is well suited for growing crops. The reason for this is that the New Zealanders have difficulty in marketing their grain because they are so far from any large markets. They

cannot compete with farming countries that are closer to the best markets.

Wool, skins, and *tallow* can be profitably shipped on the long journey to England. Large quantities of mutton are also exported, and New Zealand provides more than half of the world's supply of this meat. New Zealand pastures are more luxuriant than those of Australia, and the New Zealanders also grow more feed for their animals. This is why they concentrate on meat sheep more than the Australians do. Meat sheep need better food than wool sheep.

Turn to the map on page 383. In what part of New Zealand are the greatest number of sheep raised? Explain why. Use the physical-political and rainfall maps to help you to answer this question.

The largest and the most important dairy-farming districts are on the moist, rolling plains of North Island. The dairy industry was started by the first colonists in New Zealand, but dairy products were not exported in large quantities until refrigeration was introduced. Butter can be sent long distances in refrigerated trains and ships. Soft cream cheeses are also shipped in this way. Hard, dry cheese may be stored for years before being shipped without going bad.

Co-operatives have been organized in New Zealand to market the dairy products. Such careful inspections are made that New Zealand has earned a world-wide reputation for high quality in its dairy products. Butter and cheese factories are scattered throughout the dairying regions.

A dairy farm in New Zealand.

Courtesy New Zealand High Commissioner to Canada

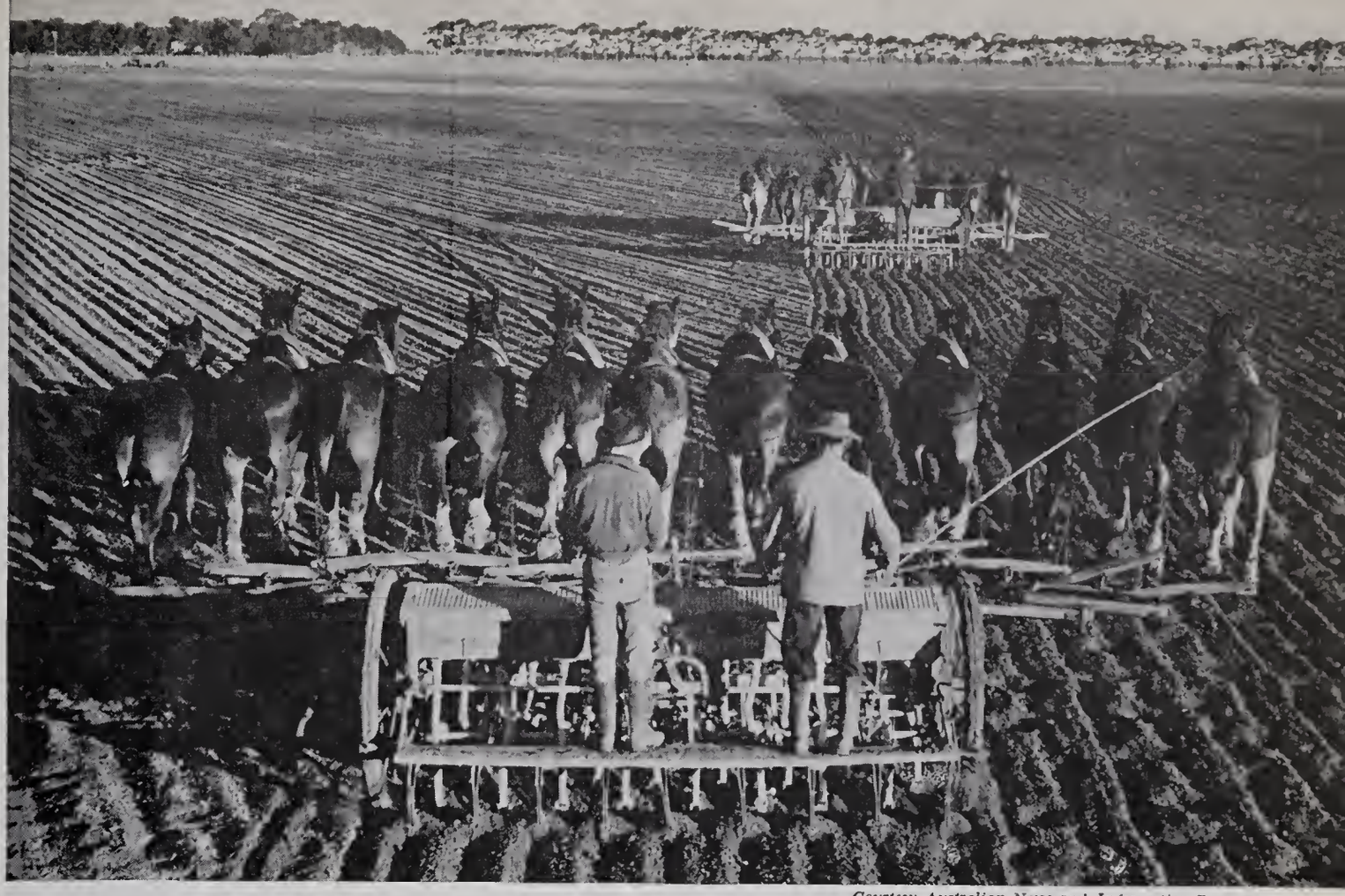


FARM LANDS

Agriculture in Australia is varied, because it has temperate, subtropical, and tropical climates. More and more land is being cultivated, and farmers are now pushing their way into what was once grazing land. Wherever the soil is good and there is enough rain, animals are beginning to share the land with crops.

Wheatlands. Australia, like Canada, is one of the important wheat-producing countries of the world. More farm land is devoted to wheat than to any other crop. Look at the map on page 383 to see where most of it is grown. Then turn to the map on pages 8-9. What is the annual rainfall in the wheat-producing region? Most of this rain comes in winter, and it seldom exceeds 25 inches. As you have already learned, wheat is well suited to this type of climate.

Australia's farming methods differ markedly from those used in the lands to the north. The wheat land is a region of rolling plains. Large farms of almost level land make it possible for Australian farmers to use machinery of all kinds profitably. Tractors or teams of six, eight, or ten horses are used to plough the ground, and wide drills sow many rows of seed at a time. Combines cut, thresh, and clean the wheat. Trucks haul great loads of grain from the fields to railway stations. With such machinery and with the aid of one helper, a farmer in Australia is able to plant and harvest as many as 300 acres of wheat.



Courtesy Australian News and Information Bureau

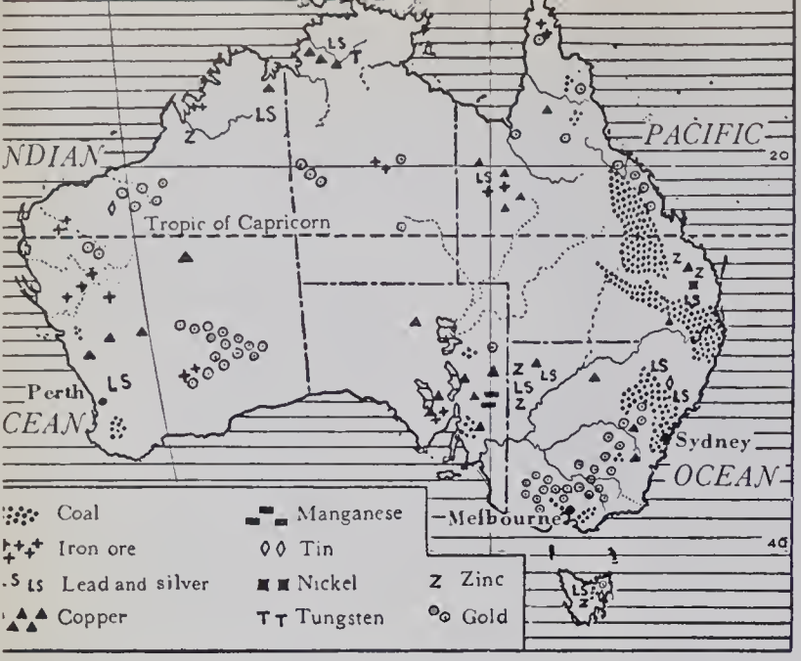
Teams of many horses are needed in sowing seed in this vast wheat field. The flatness of the land makes it easy to use horses and farm machinery for cultivating and harvesting the crop.

Sugar and fruit. Sugar cane, another important crop of Australia, grows well along the hot, wet coastlands in Queensland, east of the highlands. Large quantities of sugar are produced on plantations. These sugar plantations are different from the other tropical plantations that you have read about in that natives are not hired to do the work; everything is done by the Australians.

Bananas and pineapples are also grown in some of the rainy tropical parts of Australia. Citrus fruits are raised along the coast of New South Wales and in the irrigated parts of the Murray Valley and western Australia. Two regions in Australia have a Mediterranean climate; one is near Adelaide in the Murray River valley, and the other is near Perth in the southwestern corner of the continent. Many other kinds of fruits are grown in Australia. Much of the fruit is canned, some is dried, and some is made into jams and jellies. Large quantities of these prepared fruits are exported each year.

Apples are the most important fresh fruit export of Australia. Apples will not grow in the tropics, and they do not do well in lands that have long, hot summers. They are found in many places in Australia, but Tasmania, with its cool, moist climate is the best place for apples. The map shows that much of Tasmania is too rough and hilly to be easily cultivated. Thousands of barrels of apples are exported from there each year. The harvest there comes at the time of our spring. The fruit is sold to countries north of the equator at a time when they are not supplied with home-grown apples.

Farms of New Zealand. Almost half of the people of New Zealand are farmers, but most of them are not interested in raising crops for sale. As you have learned, they are mainly dairy farmers, and because pastures are not as good in winter as they are in



A map showing mineral deposits in Australia.

summer, farmers raise grain and root crops such as turnips to use as extra feed for their animals during the winter.

The most important grain crops grown are wheat, oats, and corn. In many places vegetables and fruit are raised, but for the home market only. The best fruit-producing region is the narrow peninsula of North Island. There the climate is warm enough for grapes, oranges, and even lemons.

MINING, MANUFACTURING, AND TRADE

Gold. When gold was first discovered in Australia in 1851, there were only 400,000 settlers there, and it seemed that few more would come, that the country would develop no further. Then gold was discovered, and thousands of people went to Australia hoping to make a fortune. The population doubled and tripled. Many of those who came hoping to make a fortune in gold, stayed as settlers.

The mining of gold is still important in Australia. That precious mineral is found in each of the states, as you can see on the map on this page. At first, most of the gold was mined in the southeastern part of the continent. Now, western Australia has taken the lead in production. Kalgoorlie, which you can find on the physical-political map, is in the centre of a large gold field.

Many other metals. Until recently, Australia had no commercial oil fields. However, recently, several deposits have been discovered in Australia, but these are not fully developed yet. It is fortunate that the country has had a good supply of coal. Notice on the map that most of the deposits are in the eastern part of the country, in the region of densest population, where they are most needed. Some deposits are good black coal, some are lignite. Deposits of the finest quality form a large basin of which Sydney is the centre. Victoria has large deposits of lignite, much of which is used to generate electricity.

About six hundred miles west of Sydney a low ridge of rock, about three miles long, rises above the surrounding desert lands. In this ridge are the Broken Hill mines. The Broken Hill mines yield ores rich in silver, lead, and zinc. Since there is no coal nearby, the ores are taken south to Port Pirie or Adelaide for smelting.

You can see on the map on this page that Australia has some iron deposits, too. However, some of the largest are in the western part of the continent, far away from coal, and only the deposits in South Australia are being mined extensively. The iron ore can be transported quite easily by boat from there to Newcastle and other ports where smelting works have been established.

New Zealand has many different minerals too, but mining is not as important there as it is in Australia. There are enough coal mines to supply local needs.

Industrial development. For a long time, almost all Australian settlers were farmers and gold miners, and all manufactured articles had to be imported. Then, gradually, as manufacturing developed in Australia, the people began to be less dependent upon other countries for manufactured goods. Slowly various industries are being established.

As you know, there are important coal deposits along the eastern coast, and the

rivers can be used to provide water power. Because it is so close to good coking coal and because it has a good harbor, Newcastle has become an iron and steel centre. Factories for manufacturing a wide range of iron and steel products have sprung up.

The manufacture of textiles and clothing is another important industry. More than 5000 tons of wool are used each year by one of the mills. It would take a large flock to supply so much wool — a flock of more than a million sheep. Many of the factories preparing foodstuffs supply only Australian markets; some provide products for export. Other factories manufacture paper, leather goods, rubber products, and farm machinery.

However, production is still small as compared with that of European industrial countries, and Australian factories still supply only a part of the needs of the Australian population. Except for prepared products of the farms and ranches, they produce little for export.

Only a small percentage of Australia's population makes a living through industry. In New Zealand, the percentage is smaller still. Most New Zealanders working in factories prepare meat, wool, and dairy products for export. Besides this, very little manufacturing is carried on, although the paper industry of New Zealand is growing rapidly.

Foreign trade. The foreign trade of Australia is large. The people produce much more wool, dairy products, wheat, flour, fruit, and meat than they need.

From the sale of the products mentioned above, the Australians get money with which to pay for imports. The leading imports are automobiles, petroleum, textiles, electrical and other machinery, chemicals, and paper. Great Britain is Australia's best customer, but the United States, France, Japan, and Germany have also been good customers. Special attention is now being given to the development of trade between Australia and the nearby oriental countries. Foodstuffs are exported to Asia and Indonesia. These regions send to Australia such products as rubber, tea, petroleum, and kapok.

New Zealand's trade is much like Australia's. New Zealand's most important exports are, as you would guess, the products of its large flocks and herds. Wool, meat, butter and cheese, hides, and skins are shipped to other countries in large quantities. Practically all the imports are manufactured goods. The amount of goods imported by Australia and New Zealand is large for regions with such small populations.

LEADING CITIES

Sydney. The harbor of Sydney is one of the best in the world. It is Australia's leading seaport, not only because it has a good harbor, but because it is a gateway to the most productive region of Australia. Along the wharves one may see wool sheds, wheat elevators, flour mills, and warehouses for storing hides. Important ship-building and repair docks are found there also.

Melbourne. Melbourne is Australia's second-largest city. It is located where a small river opens into a semicircular bay known as Port Phillip Bay. The river serves as a harbor. Small steamers can go five miles up the river to Melbourne, but larger ones dock nearer the bay. You can see that Melbourne is conveniently located as an outlet for the large wheat farms and cattle and sheep stations west of the mountains.

When ships from England come to Australia, they usually call at four ports. First, they stop at Fremantle on the southwest coast, then at Adelaide, next at Melbourne, and lastly at Sydney. Trace this route on the map and estimate its length.

Air travel is popular in Australia, for travel by train is slow, and except in densely populated sections, the service is poor.



PACIFIC OCEAN

Statute Miles 200 0 200 600 1000 1400

Kilometers 200 0 200 600 1000 1400 1800 2200


Arctic Ocean
Atlantic Ocean
Pacific Ocean
South Pacific Ocean
Beaufort Sea
Amundsen Gulf
Baffin Bay
Davis Str.
Hudson Bay
Gulf of Alaska
Bering Sea
Gulf of Mexico
Caribbean Sea
Chesterfield Inlet
Foxe Basin
Melville Sd.
Gulf of Boothia
Great Slave L.
L. Winnipeg
Great Lakes
St. Lawrence
Drake Strait
Magellan Strait
Tropic of Cancer
Tropic of Capricorn
Longitude West of Greenwich
Modified Secant Conic Projection
SCALE 1:66,800,000 1 Inch = 1,040 Statute Miles

Auckland. Auckland is New Zealand's largest and northernmost city. It is built on a roomy, well-protected harbor, and its docks are equipped with modern shipping equipment. Find Auckland on the physical-political map on pages 376-377. It has railway connections with other cities of New Zealand.

LIVING IN THE ISLANDS OF THE PACIFIC

Scattered across the Pacific are many small islands. Some are arranged in groups, some in chains, and some stand alone. Some are volcanic islands, and some are coral islands. A few have plantations and carry on trade, but most of these islands are unproductive. All, however, are becoming important in the development of world trade and transportation.

THE HAWAIIAN ISLANDS

More than 2400 miles from Vancouver and almost twice as far from Sydney, lies a chain of mountains built up from the bottom of the sea by volcanoes. These great peaks rising above the blue water form the Hawaiian Islands. On some of the islands the peaks tower thousands of feet above sea level. Tropical forests and vast plantations cover their slopes, and their edges are outlined with gleaming white sand and waving palms. Volcanoes still pour out fiery lava on the largest island, making it even larger than before.

The pineapple shoots lying on the ground will be planted and will grow through holes in the paper.

Philip Gendreau



The Hawaiian Islands are strung out in a chain 1500 miles long. In all, there are twenty islands, but only eight are inhabited. All the islands are small. The largest, Hawaii, is less than half the size of Vancouver Island. To most people Pearl Harbor, on the island of Oahu, is the best-known spot on the islands. A few miles east of this famous harbor is the city of Honolulu.

In 1898, the Hawaiian Islands were annexed to the United States as the result of an agreement between that country and the people living in the islands.

Plantation agriculture. Although Hawaii lies in the tropics, winds from the ocean give it a very pleasant climate the year round. It lies in the path of winds from the northeast. These winds are forced to rise as they reach the mountains; they give abundant rain to the northern side of the islands, but the lands that lie to the south of the mountains have only a light rainfall.

The islands help to supply the people of the United States with sugar, for sugar cane is the most important crop. Sugar cane is raised on both the north and the south slopes of the mountains. On the northern slopes there is plenty of rain, and on the southern slopes water is supplied by irrigation. Work on the plantations is done chiefly by Japanese, Chinese, and Filipinos. Coarse brown sugar is shipped to California where it is turned into white sugar by the refineries there.

Pineapples are almost as important a product as sugar cane. A frost-free climate is

needed to grow this fruit, but the rainfall need not be heavy. The pineapple plant looks somewhat like a cactus, with narrow, prickly leaves. Most of the pineapples are canned in Hawaii. These islands supply more than three-quarters of the world's entire output of canned pineapple. Look at the cans of pineapple in your grocery store and see if they come from Hawaii.

OTHER ISLANDS OF THE PACIFIC

Turn back to the map on pages 390-391 and notice the great number of islands that dot the Pacific north and east of Australia and New Zealand. They range in size from New Guinea to tiny coral islands. Most of the scattered islands are dependencies of Great Britain, France, or the United States.

Many of the smaller islands are uninhabited, but many others have become important as sites for airfields and radio and cable stations. On the larger islands most of the natives live in villages near the sea, for they spend much of their time fishing. Back of the villages there are little gardens where vegetables are grown.

World civilization. You have seen that western civilization has been carried to the four corners of the earth. The people of backward regions are no longer content with having only the bare necessities of life. Ideas of different ways of living and of making a living are being spread by means of radio, airplane, motion pictures, and armies. Trade and travel are being encouraged by the building of better roads and by the use of more ships and airplanes. People of far away places are affected more and more by world affairs. There are no longer any out-of-the-way places. Even the tiniest islands are becoming the crossroads of world routes.

THE GEOGRAPHY WORKSHOP

I. A TRIP TO AUSTRALIA

Imagine that you are going to fly from your home to Australia. Your trip will be nonstop by a great-circle route. What part of Australia is the nearest to your home? In which direction will you start? How far is it from your home to Australia? What other parts of the world are about the same distance away? If you were to beam a radio broadcast from your home to Australia, in which direction would you send it?

II. AUSTRALIA AND CANADA

Australia and Canada have many things in common. We are both British Dominions. Many of our people came originally from the British Isles and still think of it with affection. Both countries are new lands with vast areas still to be developed, and so our people must keep the spirit of adventure that led our early settlers to seek new homes abroad. Both countries have considerable length of coast facing into the Pacific Ocean and so are powers to be reckoned with in that part of the world. Because of our location, we have similar relations with a number of countries, like Japan, China, Indonesia, and Malaya, which lie in the Pacific.

But there are differences as well. Almost all Australians and New Zealanders either came from Britain or are descended from people who came from there. Canada is less than half British (49.68%), since there are many other peoples here as well. The French make up nearly a third of the Canadian population (30.27%), and there are also many Germans, Ukrainians, Dutch, Poles, and Jews. Thus Canada has a more varied population. Sometimes this raises problems



Courtesy Australian News and Information Bureau

This air view of Sydney shows the buildings, the streets, and the parks of the city, and the many wharves in its fine harbor.

unknown in the Dominions "down under"; sometimes it creates great opportunities.

Since World War II, however, Australia has been bringing in white immigrants at a rapid rate. Many of these immigrants come from non-British countries, and Australia's population is becoming more varied. In this way it may soon become more like Canada's.

Both Canada and Australia are big and rich countries. Which has the larger population? Canada has more people for its size than Australia has. Why? Look at the map on pages 2-3. Both countries have about equal areas of lowland, but most of Canada's lowland is cold or rocky, and Australia's is too dry for farming. Both countries are limited by their climates.

How do the two countries differ in their opportunities for trade and industry? What is the nearest country to Australia? What kind of people live there? Australia is far away from Europe and the Americas. What country is Canada's nearest neighbor? How many people live there? In Australia, the Murray-Darling plain is cut off from the rest of the country. What ocean does it slope to? In Canada, the St. Lawrence lowlands are close to the United States and they slope to the Atlantic Ocean, which is the busiest ocean in the world.

Canada and Australia work together, having many things to exchange. Australia can sell us fruits and hardwood lumber and wool. We can sell Australia furs, softwood timber, automobiles, and machinery.

III. REGIONS THAT CAN BE COMPARED WITH YOUR HOME

You know that British Columbia is separated from the other provinces of Canada by many high mountains that are difficult to cross. Western Australia, too, is cut off from the rest of Australia. Why is it so difficult to travel by land from western Australia to the more thickly populated regions around Melbourne and Sydney?

Compare the climate of northern Australia with that in your own community. How do you suppose the houses in the northern part of Australia differ from the one in which you live? How would the clothes worn in northern Australia differ from those that you and your classmates wear? In what part of Australia would the houses and clothing be most like those around your own home?

Find a large map of New Zealand. Examine the irregular coastline of southwestern New Zealand. How does this coastline resemble that of British Columbia? Why are there no great harbors along this coast of New Zealand?

On a globe, study the location of Australia and New Zealand in the large oceans of the southern hemisphere. Then note Canada's geographical position among the great nations of the northern hemisphere. Australia and New Zealand seem to be farther away from the centre of great world events than is Canada. Still, Australia and New Zealand are extremely interested in world

affairs. Can you explain why the people of these southern countries are so concerned with what is happening in the northern hemisphere?

IV. WHAT WE GET FROM AUSTRALIA AND THE PACIFIC ISLANDS

If you were to visit Australia or New Zealand, you would see Canadian automobiles and trucks on the roads, Canadian machines on farms and in factories. At the movies you might see an American picture.

Most of our imports from Australia and New Zealand are raw materials. Go to a store that sells woollen material and ask for samples of cloth made of Australian and New Zealand wool. Our country has many sheep, but they do not produce all the kinds of wool we need. We have to import large quantities. You might be able to find felt made of Australian rabbit fur, or shoes made of kangaroo hide.

You can find something from the Hawaiian Islands on the shelf of almost any grocery store. Nearly all the canned pineapples and pineapple juice comes from there. We get coconut oil, coconut fibre, and sugar from some of the islands, too.

V. PICTURES TO SORT

Imagine that you have the pictures described below. As far as you can tell, how many might have been taken either in this country or in Australia? Which could only have been taken in one country?

1. Cowboys driving a herd of cattle across a dusty plain.
2. A seaport city with tall buildings, busy streets, and warehouses along the wharves.
3. A field of wheat.
4. Lumbermen working in a forest of eucalyptus trees.
5. Combines at work in a wheat field.

VI. PROBLEMS TO DISCUSS

1. Australia has coal. It has wool, hides, metals, and other raw materials. What more does it need to become an industrialized country?
2. By using latitude and longitude, prove that New Zealand is almost exactly halfway around the world from the British Isles.

VII. SUPPOSE YOU LIVED HERE

The picture on this page was taken on one of the Solomon Islands. Suppose you lived in one of the houses in the village. Almost everything you need comes from what you can see in the picture.

You have learned that people everywhere need food, shelter, and clothing. What two sources of food do you find close to your house? Shelter means houses. From what do you need to be sheltered in the Solomons? Your father and mother made the house you live in. The house is built on posts. Why? The walls are of woven matting, and the roof is thatched. Where did your parents get the materials for the house?

You do not need many clothes in the Solomons. Why? For the few clothes you wear, your mother gets cotton cloth from a trader. If your father needs a knife or a few steel fishhooks, what does he sell to pay for them?

Ava Hamilton and B. Backhous





THE COMMONWEALTH OF NATIONS

The Commonwealth of Nations has been mentioned many times in this book, but nowhere have we said what the Commonwealth is or listed the countries that belong to it. All Canadians should know about the Commonwealth, for Canada is an important member of it. Through the Commonwealth we have a link with all parts of the world and with many of the races of the world.

There are Commonwealth countries in all six continents. There are Commonwealth countries in arctic, temperate, and tropical regions. Within the Commonwealth you can find deserts and jungles; forests and grassy plains; cold climates, hot climates, moderate climates, wet climates, dry climates. The Commonwealth has within its borders Moslems, Hindus, Christians, and followers of very primitive religions. It includes coal-black Negroes, brown-skinned Indians, red-skinned Indians, yellow-skinned Chinese, fair-skinned Englishmen, and many other peoples. It includes countries with very old civilizations and groups of people barely more civilized than people of the Stone Age. It includes highly industrialized countries and countries that are hardly industrialized at all, whose methods of farming have not changed in centuries. When we think of the many different types of people who live

within the Commonwealth, and all the different types of countries, we may wonder how all these very different countries came to belong to one organization, and how they have managed to hold together for so long. Remember these questions and try to answer them when you have finished studying this chapter.

WHAT IS THE COMMONWEALTH OF NATIONS?

THE COMMONWEALTH ON THE MAP

If you take a map of the world and color all the lands that are part of the Commonwealth, you will get a good idea of how much of the world belongs to the Commonwealth and how scattered these lands are. The sun never sets on the Commonwealth.

Here is a list of the members of the Commonwealth:

Nine of the members are nations in their own right. They are completely independent countries, and no one, not even the other members of the Commonwealth, can order them to do anything. These ten countries are the United Kingdom, Canada, Australia, New Zealand, the Union of South Africa, India, Pakistan, Ceylon, Ghana (the Gold Coast), and Malaya. Put them on your map in one color.

Many other places are also part of the Commonwealth because they in some way belong to one of these nine countries. The United Kingdom has a large number of

Her Majesty the Queen, who is Head of the Commonwealth, with the prime ministers of the Commonwealth. The prime ministers were attending a Commonwealth Prime Ministers Conference in London when this picture was taken.

Courtesy United Kingdom Information Services





Courtesy United Kingdom Information Services

The British navy defends the British colonies and helps to defend all members of the Commonwealth. The picture shows a line of destroyers passing a battleship.

colonies and *protectorates.* Some of these have a large measure of self-government, while others have very little control over their own government. Put these countries on the map in a second color. They are (in Europe) the Channel Islands, the Isle of Man; (in Africa) Basutoland, Swaziland, Bechuanaland, the Federation of Rhodesia and Nyasaland, Kenya, Uganda, Zanzibar, British Somaliland, Nigeria, Sierra Leone, Gambia; (in the Americas) Bermuda, the Bahamas, Jamaica, the Leeward Islands, the Windward Islands, Barbados, Trinidad, British Guiana, British Honduras; (in the Mediterranean) Gibraltar, Malta, Cyprus; (in Asia) Aden, Singapore, Hong Kong, North Borneo, Brunei, Sarawak; (islands in the Atlantic) the Falkland Islands and *dependencies,* St. Helena and dependencies; (islands in the Indian Ocean) Mauritius and its dependencies, Seychelles, Maldive Islands; (islands in the pacific) British Solomon Islands, Fiji and dependencies, Tonga, the Gilbert and Ellice Islands and other islands governed with them, and the Central and Southern Line Islands. Britain governs the New Hebrides Islands jointly with France.

Australia has some dependencies: the Cocos-Keeling Islands, Papua, Lord Howe Island, Norfolk Island, Australian Antarctic Territory, and other small islands.

New Zealand has Kermadec Island,Tokelau Island, Niue Island, Manihiki Island and its dependencies, Cook Island, the Ross Dependency and other small islands.

India governs the Andaman and Nicobar islands.

The United Nations has been put in charge of a number of countries — colonies that were taken from the defeated countries after World War I. The Commonwealth countries have been asked to look after some of these territories. You should put them on your map in a different color. They are Tanganyika, the Cameroons (Great Britain); Togoland (Ghana); Nauru, New Guinea Territory (Australia); South-West Africa (Union of South Africa); Western Samoa (New Zealand).

A FAMILY OF NATIONS

You now know a little bit about the Commonwealth. You know what countries belong to it, which are colonies and which are independent countries; you have seen the Commonwealth on a map of the world, and you know what a great variety of people, climates, and types of countries are found within the Commonwealth. But if someone were to ask you exactly what this association was, you might still have difficulty in answering his question. One of the best ways to describe the Commonwealth is to call it a family of nations. As you read the next paragraphs you will find out why.

How did this family come into being? Back in the seventeenth, eighteenth, and nineteenth centuries, all the countries of Europe were busy building colonial empires in the lands that had recently been discovered and explored. Britain was one of these countries. The British Empire grew up in a very haphazard way. At times the government hardly seemed to care. English armies won control of India so that a private company — the East India Company —

could trade more freely. Wolfe's capture of Quebec was not to conquer more territory but to keep the French from hemming in the thriving British colonies to the south. It was a huge Empire, but it was not planned. Britain gained colonies by settling land, by conquest, by treaties, and by small countries asking her to take over their protection.

Most of the reasons for wanting colonies were connected with trade. Britain needed many raw materials that she herself could not supply, things such as spices, fish, furs, cotton, molasses, sugar, and many other goods. She could obtain these things easily if she had colonies that produced them. She also wanted places where she could sell her goods, and colonies supplied her with markets. Later on, she needed supply stops for her ships and forts to protect the shipping lanes. There were other reasons for acquiring an empire, but these were the most important.

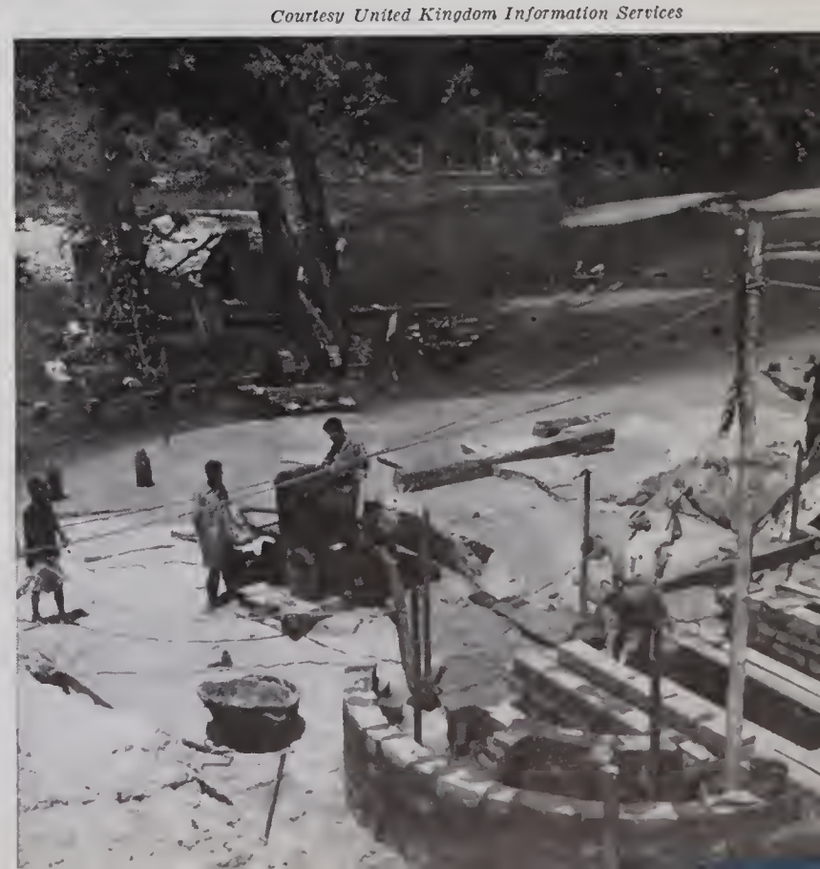
Britain, like all the other European countries with colonies, forbade the colonies to sell their goods to anyone but herself or to buy goods from any other country, and she did her best to discourage the colonies from producing the things that she wanted to sell to them. This does not seem very fair to us now, but remember that in those days no one thought that this was wrong. Britain was a good market for the colonies and also a good source of supplies. Even without the laws, the colonies would have done most of their trading with the mother country. Today, there is still a great deal of trading done within the Commonwealth. Until the colonies had been in existence for a long time, they gained much, much more from Britain than they lost. Britain paid for most of the cost of government. More important, she protected the colonies, she helped them when they were in need, and she provided them with a market for their goods.

You may have noticed that Britain was called the mother country. She acted like a parent in many ways. She looked after the colonies and told them what to do. As they grew up, they began to resent this, as many teen-age children do. The United States rebelled against what it felt was too great parental authority and, as it were, ran away from home and broke from its family completely. Canada, also, at times resented too much control from the mother country, but she managed to become independent while remaining within the family. Most parents give their children more and more independence as they grow older, and as Canada developed into a mature country, that is what Britain did. Now Canada is like a daughter who has moved away from home and lives a life separate from her family, but who is still an affectionate member of the family.

There are many ways in which the Commonwealth acts like a family. Parents of grown children often help their children when they need help, and the children, on their part, like to do what they can for their parents, even if they cannot be forced to do so. Like members of a family, Commonwealth countries often discuss matters with each other, even if, like families, they do not always take the advice given or come to a common agreement.

A railway being constructed in Malaya with money supplied through the Colombo Plan.

Courtesy United Kingdom Information Services



Families often quarrel among themselves, but if any one of them is in trouble, they all rally round. This is true of the Commonwealth, also. We help each other (though we do not have to), and when a member of the Commonwealth is attacked, the other members come to its aid, though no one can force us to do so. The way the Commonwealth sticks together was shown very clearly when Britain declared war on Germany in 1939. Within a few days, the whole Commonwealth, except Eire (which is no longer a member), had declared war on Germany. Canadians often disagree with the British, and India and Pakistan dislike each other, yet in spite of this we stay together.

Someone may ask you how the Commonwealth is governed. The answer is easy — it isn't governed! The Commonwealth has no constitution and no parliament. The members of the Commonwealth cannot meet together and pass a law that has to be obeyed by all members of the Commonwealth. But the prime ministers of the independent countries of the Commonwealth meet together at fairly frequent intervals to discuss matters concerning the Commonwealth. The foreign ministers and other ministers also often consult one another. The delegates to the United Nations from the Commonwealth countries often get together and discuss the problems before the United Nations. The countries of the Commonwealth keep each other well informed about what they are doing and what their views on various questions are. It is very rarely that a member of the Commonwealth makes an important decision on world affairs without consulting the other members of the Commonwealth and saying what it intends to do.

How do Commonwealth countries help one another? In many ways. If you are travelling in a country that has not a Canadian consulate, you can always go to the British Consulate. Sometimes Commonwealth countries charge a smaller tax on goods coming into their country from Commonwealth countries than they do on goods coming from other countries. In times of war, the various armies of the Commonwealth co-operate closely.

We also benefit from trading with one another. The Commonwealth is spread over the entire globe, but joining the various parts to one another are the trade lanes. By these trade lanes, Canadian tractors are taken to Australia. The tractors help the Australian farmers to grow wheat to send to the people in Great Britain. The British mills provide the wool for the clothes of the men who build the tractors in Canada. The Canadian tractor may be built of iron from Ontario and have tires containing rubber from Malaya, built on a core of cotton from India. The Canadian who buys a British sports car will be buying steel from Sheffield, manganese from Ghana, chromium from the Union of South Africa, and probably aluminum that has been made in Quebec from British Guiana bauxite ore.

One important way in which members of the Commonwealth help one another is through the Colombo Plan. Through this plan, the more highly industrialized members of the Commonwealth help those countries that are more backward in their methods of agriculture and manufacturing. They give money to pay for dams, roads, railways, power plants, and other projects that will increase the productive powers of the country. They send experts to other countries to teach the latest methods of farming, engineering, etc. They train men from the backward countries in modern methods and then send them home to work in their own country. The Colombo Plan is not meant to provide charity and help for the poor and needy of another country. Its aim is to help those countries to develop their resources, so that in the future their citizens will not be poor. It takes longer to help people in this way, but it is a better way. People would rather help themselves than receive charity. Through the Colombo



Courtesy United Kingdom Information Services

A view of an island in the Windward Islands of the Caribbean Sea.

Plan, members of the Comonwealth help other members to help themselves. Some countries that are not members of the Commonwealth now belong to the Colombo Plan, but it was originally a Commonwealth scheme.

The Commonwealth also helps us to know how the rest of the world thinks and lives. As citizens of a Commonwealth nation, we can go to Kenya, although we might have trouble getting into Ethiopia or Egypt. We can take a trip through India, although we could probably not get into China.

The Commonwealth is a good association to belong to. It gives us friends all over the world. Because we belong to the Commonwealth, we know that in times of crisis there are nations that will stand by us.

THE COUNTRIES OF THE COMMONWEALTH

Earlier in this book you studied about some parts of the Commonwealth. You studied Canada, Jamaica, the Bahamas, Trinidad, Great Britain, the Union of South Africa, India, Pakistan, Ceylon, Singapore, Hong Kong, Australia, and New Zealand. These places we shall not describe again. In the following paragraphs you will learn a bit more about some of the countries that are fellow members of Canada in the Commonwealth of Nations.

IN EUROPE

The Isle of Man. The Isle of Man, in the middle of the Irish Sea, depends upon tourists to provide its main source of *revenue.* Much of the land is under cultivation, and turnips are exported. The rest of the land is used for pasturage.

The Channel Islands. There are two Channel Islands, Jersey and Guernsey, plus



Courtesy United Kingdom Information Services

Barbados is the most educationally advanced member of the British Caribbean Federation. This is a Barbados schoolroom.

seven islands that are dependencies of Guernsey. Alderney and Sark are the largest of these.

The main industry of these islands is agriculture. They export early potatoes, fruit, tomatoes and flowers. Guernsey slopes down from south to north and has to grow many of its vegetables in hot houses, but Jersey faces south, and is therefore able to grow all her produce in open fields. Why does the way in which the land slopes make a difference? As you may guess from the names of these two islands, they are famous for their *purebred* cattle, and export many animals each year.

The knitting industry used to be of great importance to the islands. Sweaters are still known as jerseys in many places. Smuggling between England and France also used to be a flourishing business. Can you figure out why? The islanders have always been great fishermen, and many earn their living by fishing.

IN THE AMERICAS

In 1958, there will be a new country in Middle America. Jamaica, the Leeward Islands, the Windward Islands, Barbados, and Trinidad will join together under one government. The new country will be known as the British Caribbean Federation, and the capital of the new country will be at Port of Spain, in Trinidad.

Bermuda. The Bermuda Islands are made of coral. You may be surprised to find coral islands so far north. The coral polyps can live there because the Gulf Stream keeps the water around the islands warm. The Gulf Stream also gives the islands a pleasant, warm climate, which attracts many tourists from Canada and the United States in the winter. The tourist trade is the chief industry of the islands. They have little fertile ground. The land that can be farmed is used to grow vegetables and fruits for the population and for tourists. There are no streams on the islands, and all the water is obtained by collecting rain water in great tanks.

The Leeward Islands. There are four main groups of British islands in the Leeward Islands. The other islands belong to the United States and France. The main exports of these islands are sugar and sea-island cotton, a cotton with a very long fibre. Vegetables and fruits are also grown.

The Windward Islands. There is one French island among the Windward Islands, but the rest are British. They are volcanic, and on them are grown the usual crops of the region: sugar, bananas, cocoa, and citrus fruits. Grenada is known for its spices, and especially for nutmeg.

Barbados. Barbados is not named on your map. It is found just east of the Windward Islands. Despite the low latitude, the climate is pleasant, for the trade winds keep it cool. Most of the island is under cultivation, but sugar is about the only crop grown. Sugar and molasses, which is made from sugar, are the only exports.

British Guiana. The people of British Guiana all live on the coast. Behind the area of settlement, the dense forest stretches up into the Guiana Highlands. This land is largely unexplored.

The economy of the country depends on sugar, molasses, rum, forest products, bauxite, and rice. The sugar is grown on plantations, while the rice is grown by farmers on small holdings. The production of rice is increasing, but sugar is still much more important. The government is encouraging the rice growers by water control systems that it has built. Most of the rice is exported to the British Caribbean countries, which cannot grow enough for themselves.

British Guiana is the second largest producer of bauxite in the world. Much of this ore is sent to aluminum plants in Canada. Diamonds and gold are dredged out of the rivers.

Canada is British Guiana's best customer. We take half of its exports.

British Honduras. The small country of British Honduras is very sparsely populated, as you can see from the population map. It is mountainous and has a very heavy rainfall because the prevailing winds come from the northeast. The soil is poor and thin, and very little of the dense forest has been cleared. Many of the native farmers in the forest clear a small plot of land, farm it for a few years, and then abandon it and move to another spot. The chief exports of British Honduras are woods, such as mahogany, cedar, and pine, which grow in the thick tropical forests, chicle, which is taken from the sapodilla tree, and also coconuts, bananas, and citrus fruits. *Sand spits* and reefs along the coast make it difficult for ships to reach British Honduras.

IN AFRICA

British West Africa. The countries of British West Africa are Nigeria, Ghana (the Gold Coast), Sierra Leone, and Gambia. Ghana became a self-governing country in March, 1957. It is the first Negro country in the Commonwealth to achieve independence. It changed its name from the Gold Coast to Ghana when it became independent. Find the countries of British West Africa on the map on pages 276-277. Be sure that you know where they are, because you will have to find them on other maps on which they are not named.

If you look at the vegetation map, you will see that two of these countries have two types of vegetation, – tropical rain forest and *savannah* (tall grass with scattered trees), while the other two lie almost entirely in the savannah belt of the Sudan. Actually, Sierra Leone has some rain forest along the coast. You know by now that in the tropical rain forest there is rain all year round, while in the savannah there are both dry and wet seasons. For part of the year the winds blow from the south, bringing with them hot, moist air from the Gulf of Guinea. During the rest of the year, a dry, hot wind from the Sahara blows over these lands. However, this dry wind does not reach the coast of the Gulf of Guinea in many places. The climate of the whole region is hot all year round, and there are few places where the

A village street in British Honduras. The group of men are pulling a fire engine.

Courtesy United Kingdom Information Services



height of land is enough to make the climate much cooler.

Plantations are not nearly as common in British West Africa as they are in many tropical countries that you have studied. Most of the crops are grown on small native farms. The systems used by the farmers in the rain forest regions are much the same as those you read about in the Amazon Basin rain forest. The natives clear some land, farm it for a while, and then move on to another piece of land. Some grow cash crops, but many are subsistence farmers. In the rain forest they grow yams, cassava, *maize,* and bananas for themselves. In the savannah region they grow grain, mostly millet. Why do they grow millet? They also raise cattle in the savannah, but they do not eat them because cattle are considered to be a mark of wealth. The more cattle a man has, the wealthier he is, no matter what the cattle are like. As a result, the cattle are small and scrawny, and there are too many for the amount of pasture. In wet Sierra Leone, rice is the main diet.

Gambia is the poorest of the British West Africa countries. It has no railway and only one export of any importance, which is *groundnuts.* Groundnut is another name for peanut. Groundnuts need a hot, fairly wet growing season with a dry period for harvesting. Most of the groundnuts are not eaten, but are used to provide vegetable oil. Recently, titanium has been discovered in Gambia.

Sierra Leone was known as the "white man's grave," because the hot and very damp climate killed so many white men who went there. The rainfall map shows that the rainfall is heavy. Most of this rain falls during the rainy season.

Sierra Leone's most valuable export is oil palm *kernels.* The oil palm trees grow wild in the tropical rain forest, and the Negroes go through the forest collecting the kernels. Vegetable oil is taken from the kernels. Plantations of oil palms are now being planted in Malaya and Indonesia, and the governments of West Africa are worried that people may start buying from those countries rather than from themselves, so they are trying to improve the methods of collecting the kernels and the methods of extracting the oil. Sierra Leone is an important source of iron ore and diamonds.

Ghana produces about a third of the world's supply of cocoa. Cacao trees grow only in hot, humid rain forests. Originally, the cacao tree grew only in America. It was only recently that it was brought to Africa,

The new and old ways of obtaining oil from oil palm nuts in West Africa.

Courtesy United Kingdom Information Services





where it has done well. However, diseases are now beginning to attack the trees, and some of the older trees no longer bear fruit. The government is afraid that some other country will start growing cacao trees and take over their position as the chief supplier of cocoa. Look at your vegetation map and figure out what other countries could grow cacao trees.

As its old name would suggest, gold is mined in Ghana. Ghana produces about three per cent of the world's supply. It is the second greatest producer of manganese. Bauxite has recently been discovered in Ghana, and a large hydro-electric development has been started to supply power for making aluminum.

Ghana also has many oil palms in the forests along the coast and exports oil palm kernels.

The largest country in British West Africa is Nigeria. In the drier north, the farmers grow groundnuts and cotton for export. In southern Nigeria, cacao trees and oil palms grow, as you might expect. Nigeria is by far the world's greatest producer of oil palm products.

Most of the world's supply of columbite (outside of the Soviet Union) comes from Nigeria. Columbite is used in making a special steel that is used in airplane engines. Nigeria is also a leading producer of tin.

British East Africa. Find the countries of Kenya, Uganda, Zanzibar, Tanganyika, and British Somaliland on the map on pages 276-277. British Somaliland is not really part of British East Africa, but we shall include it in this section. Find these countries on the vegetation and rainfall maps. You will notice that this region does not receive as much rain as British West Africa. In fact, parts of British East Africa are semi-desert and support little life. Does rain fall all the year round there, or is there a dry season?

The equator runs through British East Africa, and from this fact you can imagine



Courtesy United Kingdom Information Services

The tsetse fly keeps much land in Africa uninhabited. The man in the picture is doing research on the tsetse fly. Through such research, scientists hope to find some way of getting rid of the tsetse fly.

what the temperatures are like. Only in the highlands do Europeans find the temperatures pleasant. Most of the Europeans in British East Africa live in the highlands of Kenya. Some live in the higher ground in Tanganyika, but in the other countries, there are few Europeans apart from government officials.

As in British West Africa, most of the land is used to grow food for the native population. Europeans grow products for export, and so do a number of the natives now. One of the barriers to progress in this part of Africa has been that the Negroes there are not very ambitious or industrious, though they do not lack intelligence. Their farming methods have been very backward, but the governments are making progress in teaching them better farming methods. Much of the land is used for grazing cattle, but the cattle are scrawny and of poor quality, for the same reasons that they are of poor quality in British West Africa.

Much of the land in British East Africa is not being put to use, because the climate is too dry, or the land is not fertile, or because of the tsetse fly, which carries a disease that kills the cattle. In Tanganyika, especially, there are large stretches of tall elephant



Courtesy United Kingdom Information Services

Miners in a copper mine in the Northern Rhodesian copper belt.

grass, which cannot be used for pasture. It is the home of big game, of elephants, lions, giraffes, and the other wild animals of Africa.

In Kenya, sisal, tea, cotton, and coffee are grown for export.

Uganda is slightly lower in altitude than Kenya, and is therefore not a good country for Europeans. The natives of Uganda are quite progressive and have built up an export trade. There is plentiful rainfall in Uganda, and the vegetation is lush. Cotton is the most important export. Uganda is the largest exporter of coffee in the Commonwealth. Oil seeds, ivory, tin ore, sugar, and rubber are also exported.

Tanganyika produces almost half the world's supply of sisal. This plant was brought from Mexico. It grows well in hot, dry savannah lands. Sisal is grown mainly by Greeks and Asians, who can stand the hot climate better than most Europeans can. Coffee, too, is grown for export.

Tanganyika also exports many diamonds. It has the largest diamond mines in the world.

Zanzibar is a clove island. Eighty per cent of the world's supply of cloves comes from there. The island is low-lying and therefore very hot. It is also very wet. In this type of climate, cloves thrive.

British Somaliland is a very poor country. It is semi-desert, and most of its inhabitants are wandering herdsmen.

The Federation of Rhodesia and Nyasaland. In 1953, Southern Rhodesia, Northern Rhodesia, and Nyasaland joined to form one country. It is now the British colony that is the most nearly self-governing. It has almost complete control of its own government.

The countries of the Federation have advanced greatly economically since the end of the Second World War. More metals are being mined there than ever before, and the farmers are growing more crops. Southern Rhodesia has made great strides in increasing the number of its industries. The Federation is still by no means an industrial nation, nor is it a wealthy one, but it is making progress.

Your maps will show you that the Federation is situated on a plateau, that it has a savannah type of vegetation, a reasonable amount of rain, and a dry season. In Southern Rhodesia, the dry season is the longest, and much of the land is covered by rather sparse vegetation. Northern Rhodesia and Nyasaland have good pastures and even some forests in the higher regions. However, much of Northern Rhodesia and Nyasaland are infested with the tsetse fly and cannot be used for pasture.

Most of the people of the Federation are farmers. Most of the European farmers live in Southern Rhodesia, on a high ridge that runs through the middle of that country. There the climate is pleasant. Most of the farming in the rest of the country is done by Negroes. The staple crop of the population is maize. The production of maize has increased in the last little while, and in a good year the country can produce more than it needs. However, in many places the rainfall cannot be counted on, and in a bad

year, when there is not enough rain, maize has to be imported.

The chief agricultural export is tobacco, most of which goes to Britain. The Federation produces about one-eighth of the world's supply. The production of tobacco has increased greatly since the war because Britain is now buying more tobacco from the Federation than ever before. Britain is trying to buy as little tobacco as possible from dollar countries, and so has turned to the Federation, which is a *sterling area,* for its tobacco.

Minerals are by far the most important export of the Federation. Of the minerals, copper is very much the most important. The Federation produces almost one-third of the world's supply of this mineral. All the copper is mined in a small area in Northern Rhodesia. Much of the ore is refined before it is exported, and when another large refinery is completed, Northern Rhodesia will be able to refine all the copper that is mined.

Gold was what first brought white settlers to Rhodesia, but gold is declining in importance. Southern Rhodesia produces about one-fifth of the world's supply of chrome ore and is the leading producer of high-grade asbestos, although it is not high on the list of the producers of all types of asbestos.

If you look at the physical-political map, you may be able to find one thing that has greatly hampered the Federation's attempts to produce articles for export: it has no outlet to the ocean. Fortunately for the Federation, its minerals are so valuable that it is worthwhile to pay the extra cost of shipping them overland, but that is not true of all the things that the Federation produces. The surrounding countries, especially the Union of South Africa, supply a market nearby for some products.

Basutoland, Bechuanaland, and Swaziland. Basutoland lies almost entirely within the Drakensberg Highlands. Hardly any Europeans live there. The native population raises grains and animals. The rainfall varies greatly from year to year, and therefore so does the amount of food produced. Poor methods of farming have led to erosion and loss of fertility in the soil. The government has tried to raise the quality of the animals but has succeeded only with sheep. The country is not self-supporting, but manages to pay for its imports with exports of wool and mohair and with the wages of the men who go periodically to the Union of South Africa to work in the mines.

Bechuanaland is a dry country. The Kalahari Desert lies within its borders, and nowhere is the pasturage very lush. Raising cattle, either through nomadic herding or on ranches, is the main industry. Bechuanaland exports only the products of these animals, such as hides and skins and meat.

Swaziland is the richest of the three countries. It has the best farm land, and it has minerals. Its chief exports are asbestos and live animals. Its inhabitants, like those of Basutoland, often leave for a while to go and work in the South African mines.

IN THE MEDITERRANEAN

Gibraltar. On a high rocky cliff overlooking the Strait of Gibraltar is the small colony of Gibraltar. Though it covers only two and a quarter square miles, it is very important to Britain, for it guards the entrance to the Mediterranean Sea. The coast of Africa is only fourteen miles away, and the guns of Gibraltar command the channel. In time of war, this post can be of the greatest importance. Not only does it allow Britain to control enemy shipping, but it also prevents another country from keeping Britain out of the Mediterranean Sea, and it gives British ships a place at which to refuel, get repairs, and take on supplies.

Malta. Malta is another base for Britain in the Mediterranean. During the last war it was invaluable as a base from which Allied



Courtesy United Kingdom Information Services

A scene in the British colony of Malta, in the Mediterranean Sea.

airmen could attack Italy and Africa. It has excellent harbors.

The island is highly cultivated. Like Italy, it has many terraces on the hillsides. Because it is so far south, it is able to send early vegetables to Britain to be sold for high prices. Malta grows a number of different crops, such as wheat, barley, vegetables, and grapes, to feed its own population, but it also has to import food. The island relies on the British garrison to provide work. Malta is not a rich island, and without the money brought to the island by the British forces and by tourists the inhabitants would be badly off.

Cyprus. Britain's base in the *Middle East* is Cyprus. An English king first conquered Cyprus during the Crusades, but gave it away. It did not return to Britain until the nineteenth century, when the Sultan of Turkey gave it to Britain in return for British protection. Though strategically placed, Cyprus is not as good a base as it might be because the population is unfriendly. Most of the inhabitants are Greek, and they want Cyprus to belong to Greece. However, twenty per cent of the inhabitants are Turkish and would object strongly if Greece governed Cyprus.

Cyprus is largely an agricultural country. A large number of crops are grown, including grapes, cotton, and barley. Irrigation is used in some places to allow crops to be grown in the hot Mediterranean summers. Because the hot summer sun dries up the pastures, goats and sheep are the only animals kept in large numbers. The goats cause great damage by destroying much of the forest and causing soil erosion.

Over half the exports of the island are products of its mines, chiefly copper and *iron pyrites,* asbestos, chromite, and gypsum. It is a major producer of iron pyrites.

IN ASIA

Aden. Aden is a rocky, hot, dry, barren country. Very little rain falls there. The town of Aden has about 5 inches a year. In the mountains there may be as much as 30 inches, but in the eastern section, there are places in which it only rains about once in every five years. In such a land, much agriculture is not possible. There are farms near rivers and where underground wells provide water for irrigation.

The town of Aden is built in the crater of an old volcano. It has no water, and until 1930 the inhabitants of Aden got their water by distilling sea water. Now water is piped in from underground wells some distance away.

The town of Aden is essentially an entrepôt and refuelling station. Since the building of the Suez Canal it has become an important stopping place for ships using the canal, for it is the only good harbor on the route to India. Aden can receive plentiful supplies of fuel from the nearby oil fields. A large oil refinery is now being built there so that the oil does not have to be refined elsewhere. It used to be sent to England to be refined, and was then shipped back again to Aden. Many goods from Arabian countries — skins, hides, coffee, cotton, etc. — are sent to Aden to be shipped to other countries.

The Federation of Malaya. If you look at your maps, you will see that the rainfall is heavy in Malaya. Rain falls on most days. The peninsula is one great dense rain forest, and very little exploring has been done in the interior, even by the Malayans. The Malayans have never wandered very far from the river banks.

Most of the cultivated land is used for rubber plantations. Malaya produces almost a third of the world's supply of natural rubber. Tin almost equals rubber in importance as an export. Most of the workers in the mines are Chinese. The tin industry was started by the Chinese, and they brought laborers from China. Now there are almost as many Chinese as Malayans in Malaya.

Rice is the *staple diet* of the people, but so much land is used for rubber that much of the rice has to be imported. Fish are also an important part of the people's diet. Coconut palms grow along the coast, and some coconut oil is exported.

Borneo. There are three countries under British control in Borneo: North Borneo, Brunei, and Sarawak. They are tropical countries with dense rain forests. Most of the people are small farmers. Rice is the staple diet, but these countries do not grow enough to feed themselves. In all three countries there are rubber plantations, and Sarawak and Brunei have oil wells. Canada is the only country within the Commonwealth that produces more oil than Brunei does.

ISLANDS IN THE ATLANTIC OCEAN

Falkland Islands. The climate of the Falkland Islands is temperate and rainy. The outstanding feature of the climate is the wind, which blows almost constantly and often at gale force. Because of the winds there are no trees on the islands. Little can be grown, but sheep can be raised on the grass. There are no means of transportation on the islands except horses and rivers.



Courtesy United Kingdom Information Services

Rubber being made in a factory in Malaya.

The Falklands were once an important *revictualling* and repair stop on the way from Europe to the Pacific Ocean, for they were on the old route around the southern tip of South America and have good natural harbors. Since the invention of the steamship and the opening of the Panama Canal, the islands have ceased to be a *port of call.*

The dependencies of the Falkland Islands are South Georgia, South Orkney, South Shetland, South Sandwich, and the Antarctic territory to the south of the Falklands. The dependencies, except for South Georgia, are ice-bound for most of the year. They are used by whaling crews, and men go to them to hunt seals. Most of the seals have been killed, and the government now allows only a limited amount of sealing to be done.

St. Helena. St. Helena is the crater of an extinct volcano that rises above the waters of the Atlantic Ocean. Until the building of the Suez Canal it was an important port of call on the sea route to India. It is still used by some of the ships going to South Africa, but it is no longer the important port that it was. It grows and exports hemp.



Courtesy United Kingdom Information Services

These women in Mauritius are harvesting leaves that will be made into fibre.

The two dependencies of St. Helena — Ascension and Tristan da Cunha — are also volcanic peaks. Ascension is a cable and wireless station. In 1942, a naval station was established on Tristan de Cunha. Until then the people living there supported themselves as best they could, and had little contact with the outside world. Now, with the encouragement of the naval chaplain, they are building up an export business in crawfish.

ISLANDS IN THE INDIAN OCEAN

Mauritius. Britain captured Mauritius from the French because, during the wars of the eighteenth century, the French fleets based there did much damage to British shipping in the Indian Ocean. The population is still largely French. The main product of the island is sugar cane. The fertile volcanic soil, plentiful rainfall, and high summer temperatures are ideal for sugar.

Rodrigues and the Chagos *Archipelago,* and several other small islands are dependencies of Mauritius.

Seychelles. These are pleasant islands, but because they are far from any area of dense population, and because the steamships do not call there frequently, they have not been able to build up a tourist trade. The islands are covered with coconut plantations, and these and the cinnamon bushes that grow on the hillsides provide the exports.

ISLANDS IN THE PACIFIC OCEAN

Scattered across the Pacific Ocean are a number of islands that belong to Britain, Australia, and New Zealand. You already know something about these islands. They are either volcanic, or coral, or volcanic with coral reefs. Fringing the shores of all these islands are coconut palms. These trees grow well in sandy soils in tropical climates. Because the nuts float, they have spread to all the islands of the Pacific. Besides getting food, drink, clothes, and building material from the coconut palms, the natives also get copra, the chief export of most of the islands. Copra is the dried meat of the coconut. Oil for making soap and margarine is obtained from copra.

There are a number of plants that are grown on the islands: yams, breadfruit, sweet potatoes, sago, bananas, as well as beans and tomatoes. Most islands have pigs, which the islanders eat on special occasions. Fish also supply food.

On the map of the Pacific Ocean on pages 390-391, look up the names of the islands we mention in the next paragraphs. Many of the islands are very small and have few inhabitants. We shall describe the more important ones. The names in the brackets are the islands named on your map that are part of the main island group, or islands that are ruled by the main island group.

The islands that are governed or protected by Britain are: the Solomon Islands (San Cristobel, Guadalcanal, Choiseul, plus Santa Cruz), Gilbert and Ellice Islands (Makin, Tarawa, plus Phoenix Island, Washington Island, Fanning Island), Fiji Islands (Viti Levu, Vanua, Levu, plus Rotuma, Pitcairn,

Ducie), Tonga, and the Central and Southern Line Islands (Flint, Caroline, Vostok, Malden, and Starbuck. The United States also claims these islands.) Britain also rules the New Hebrides jointly with France.

New Zealand Islands are: Kermadec, Western Samoa (Savaii, Upolu), Tokelau, Manihiki (plus Tongareva), Cook, and Niue (not on the map).

Australia governs two Pacific islands: Norfolk and Nauru.

Solomon Islands. The Solomon Islands are mountainous and have little level land. Forests cover almost all the land, and copra and cocoa, grown on plantations, are the chief exports. Some timber and ivory are also exported. There are few Europeans there, as the climate is hot, damp, and oppressive. These islands are one of the few places left where there may still be cannibals.

Gilbert and Ellice Islands. The Phoenix Islands and the Line Islands, Christmas, Fanning, and Washington, are governed with the Gilbert and Ellice Islands. They are all low coral islands, and grow very little but coconut palms. Ocean Island (not on your map) is the centre of the government. It has deposits of *phosphates*.

Fiji. Most of the Fiji Islands are mountainous and rugged, but there are a few low-lying coral islands among the islands. The climate is wet and hot, but healthy, and the vegetation is luxuriant. The southeast trade winds bring heavy rains, but the northwest corners of the islands, in the *rain shadow* of the mountains, are dry. The rich volcanic soil and plentiful rain make sugar plantations profitable. Indians were brought to Fiji to work on the plantations because the Fijians did not take to this kind of work, and now Indians outnumber the Fijians. Sugar is the most important export, but gold and copra are also exported, as well as smaller amounts of bananas and pineapples.

Tonga. Tonga, or the Friendly Islands, is ruled by Queen Salote, under the protection of Great Britain. Some of the islands are volcanic (and eruptions still occur), and some are coral. The climate is quite dry for islands, and temperatures do not rise too high. However, *hurricanes* often occur. This is true in many Pacific islands. Large areas of the land are under cultivation, and the people grow the usual crops for themselves. Copra and bananas are the chief exports.

Western Samoa. Western Samoa is a *trust territory* administered by New Zealand. The islands are very lovely, with high volcanic mountains and cool, green valleys. They are well watered and fertile, and the climate is usually pleasant. Coconuts, cocoa, and bananas are the principal produce of Western Samoa.

Cook Islands. Like many of the other groups of Pacific islands, the Cook Islands are a mixture of volcanic and coral islands. They have a pleasant climate. The people grow bananas, coconuts, and tomatoes.

These people are taking the meat out of coconut shells. The meat will be dried, and will then be called copra.

Courtesy United Kingdom Information Services



OTHER ISLANDS AND TERRITORIES

Other New Zealand Possessions. Other New Zealand islands shown on your map are Chatham, Bounty, Auckland, Antipodes, and Campbell. They are all quite small. New Zealand also claims 175,000 square miles in Antarctica, known as the Ross Dependency.

Other Australian Possessions. Australia governs the Cocos-Keeling Islands, Lord Howe Island, and the uninhabited islands of Heard, McDonald, and Macquarie. Australia also claims the Australian Antarctic Territory, which covers 2,472,000 square miles.

Papua and New Guinea. Papua is governed directly by Australia, and the New Guinea Territory is a trust territory. The New Guinea Territory includes Northeast New Guinea, the Bismark Archipelago (New Britain), the Admiralty Islands, and Bougainville in the Solomon Islands. Papua includes the Louisiade Archipelago.

This is a wild country. The temperatures, except in the high mountains, are hot, and the rainfall is very heavy. For part of the year the southeast trade winds bring rain, except to the west, and for the rest of the year heavy rains come from the north. This means, of course, that the vegetation is that of the rain forest. In the rain forest the farmers move from place to place every few years, clearing new farms, as they do in the Amazon Basin. The part of New Guinea that is shaded from the southeast winds by Australia has a dry season. On your vegetation and rainfall maps you can find this region. New Guinea and Papua do not export much. Their exports are copra, cocoa, and rubber.

From the descriptions of the Commonwealth countries that you have read in this chapter and in the rest of the book you can see that what we said at the beginning of this chapter is quite true: the Commonwealth contains countries and peoples of every variety, and we, as members of the Commonwealth, have friends in all parts of the world.

THE GEOGRAPHY WORKSHOP

I. THE WORLD IN YOUR COMMUNITY

Make a display of products that Canada buys from the Commonwealth. In your display, have at least one article from each country of the Commonwealth. For Britain and some other countries you may want to have more than one article in your display.

II. THE COMMONWEALTH AND MAPS

1. Find a globe or map on which the lines of longitude are ten degrees apart. Are there any two lines between which there is not a part of the Commonwealth?
2. Are there any parallels of latitude between which there is no part of the Commonwealth?
3. Using the population map, find out how many countries of the Commonwealth have over 250 people per square mile. How many have land that is uninhabited? How many have large areas of land with under two people per square mile? In the Reference Tables at the back of the book find the country of the Commonwealth that has the largest population. How many countries of the Commonwealth have a larger population than Canada? Are any countries of the Commonwealth larger than Canada?
4. Using the rainfall map, find how many parts of the Commonwealth have 20-40 inches of rainfall. Find the same areas on the vegetation map. Do all these places with the same rainfall have the same kind of vegetation? Explain why there is a difference.

You may find this exercise easier if you first outline on a blank map the areas that have a rainfall of 20-40 inches and then put on the map the kinds of vegetation found within these areas.

III. RESOURCES OF THE COMMONWEALTH

Go through this chapter and the chapters in the rest of the book that describe parts of the Commonwealth and make a list of all the minerals that are found within the Commonwealth. Are there any important minerals that are not found within the Commonwealth? Can you think of any product that cannot be grown or produced within the Commonwealth?

IV. PICTURES TO SORT

Imagine that you have the following photographs in front of you. Which ones could not have been taken in the Commonwealth?

1. A busy city street jammed with cars. There are signs written in both English and French.
2. A semi-arid plain. There are a few sheep in the picture.
3. A colony of seals resting on a beach.
4. A sandy shore fringed with palm trees. Mountains covered with dense forests can be seen in the background.
5. Chinese miners going to work.
6. Llamas going up a mountain trail to a mine.

V. A TRIP

Choose one place in the Commonwealth that you would like to visit, and plan a trip there. Decide what you would like to see when you get there and what things you would like to buy to bring home.

A small coastal vessel being loaded with copra in the Fiji Islands.

Courtesy United Kingdom Information Services



GLOSSARY

In some cases the words are not defined fully; only the meanings used in the text are given. Any words in the definitions that you do not understand may also be in the glossary.

Adobe A brick made of sun-dried clay. It is used mostly in the dry regions of the southwestern United States and northern Mexico.

Agriculture Farming. The growing of crops and the raising of animals.

Altiplano A Spanish word meaning a high plain. It is used to refer to the high plateau in the Andes that stretches from 15° south latitude to 20° south latitude.

Altitude The height of a place or region. Altitude usually refers to height above sea level.

Antarctica The southernmost continent. The continent that surrounds the South Pole.

Antarctic Circle The parallel of 66½° south latitude. At this parallel there is one twenty-four hour period of sunlight and one twenty-four hour period of darkness each year.

Aqueduct A man-made channel or pipe for carrying water over long distances.

Archipelago 1. A sea or sheet of water sprinkled with islands. 2. The islands of such a group. The largest archipelagos are: the East Indies, the West Indies, Japan, the Philippine Islands, the Faeroes, the Aleutian Islands, and the islands of northern Canada and the Soviet Union.

Arctic Circle The parallel of 66½° north latitude. At this parallel there is one twenty-four hour period of sunlight and one twenty-four hour period of darkness each year.

Arctic region 1. The land around the North Pole. 2. The land north of the tree line.

Arid region Desert.

Artesian well A well made by sinking a pipe into the earth down to a body of underground water. The water flows up the pipe without having to be pumped.

Asbestos A mineral that can be separated into fibres. It is used to make things that have to be fireproof. Asbestos is spun into cloth, made into shingles, and used in many other articles. Because it is a poor conductor of heat, it is often used to cover hot water tanks and pipes to check the loss of heat.

Asphalt A sticky semi-solid substance formed when parts of certain petroleums evaporate. It is found sometimes as a lake and sometimes in rocks saturated with asphalt. It can also be obtained artificially from petroleum. Asphalt is used in paving, roofing, and water-proofing.

Atlantic Provinces The four provinces of Canada on the Atlantic coast: New Brunswick, Newfoundland, Nova Scotia, and Prince Edward Island.

Bank (fishing) A part of the ocean floor that is fairly near the surface of the ocean, though still deep enough for ships to sail over. A bank is usually from 20 feet to 600 feet below the surface of the ocean. Banks are usually good fishing grounds.

Barge A flat-bottomed boat used on rivers to carry cargo. Often they have no engine and have to be pulled or pushed by another boat.

Basin 1. A broad area of the earth's surface surrounded by higher ground. 2. A drainage basin.

Bauxite A clay-like earth in which aluminum is found in fairly large quantities. Aluminum is found in many other substances, but only in bauxite is there enough in one place to make it profitable to mine.

Bay A part of a lake or sea extending into the land. It is not as long nor as narrow as an inlet or a fiord.

Beef cattle Cattle that are raised and fattened to provide meat, rather than raised to provide milk.

Blast furnace A furnace in which ores are smelted. It gets its name from the fact that air is forced into the furnace under pressure to keep the temperature high.

Border The outer edge of a place or region. Boundary.

Boundary The edge of a country or region.

Bottom land The lowland along a river that may become flooded if the river overflows its banks.

Broadleaf forest A forest containing trees with broad leaves rather than needle-like leaves. Broadleaf trees are evergreen where the growing season lasts all year and there is plenty of rain all year, but in other places they lose their leaves during the winter.

Bush flying Flying done in areas of sparse population where there are no landing fields. The pilots use lakes, glaciers, or level land to land and take off on.

By-product Not the main product. Something that is produced in making the main product. Coal tar is a by-product of the coke industry.

Cacao tree The tree from whose seeds cocoa is made.

Canal An artificial channel filled with water used as a waterway for ships, or for carrying water for irrigation or for drainage purposes.

Canyon A steep-sided, narrow valley, usually with a river running through it.

Cape A point of land jutting out into water.

Caravan A group of traders travelling together. Caravans are most common in North Africa and Asia, especially in desert areas and areas of sparse population.

Cash crop A crop raised to be sold rather than to be used by the farmer and his family.

Cassava A tropical plant with a starchy root that is good to eat.

Cattle Domestic animals of the cow family: cows, steers, bulls, oxen.

Causeway A road built through swampy ground or shallow water whose bed has been raised above the level of the surrounding ground or water.

Cereal Any plant of the grass family whose seeds are good to eat. Wheat, rice, barley, oats, rye, maize, millet, and sorghum are cereals.

Channel 1. A strip of water wider than a strait that joins together two bodies of water. 2. The bed of a river. 3. A depression through which water flows. 4. The deeper part of a river; the part in which ships can safely sail.

Charcoal Charcoal is obtained by burning or heating certain materials such as wood slowly without a supply of air. Charcoal is used in some blast furnaces and for household cooking, especially broiling.

Chemical industry An industry that produces chemicals. There are over 700,000 chemicals listed; the list includes fertilizers, drugs, dyes, perfumes, and explosives.

Citrus fruit A type of fruit with a thick skin, pulpy interior, and acid taste. Oranges, lemons, limes, and grapefruit are the most common citrus fruits.

Cliff A high, steep, natural wall of rock.

Climate The average type of weather of a region.

Coast The land where land and water meet. The seashore.

Coastal plain The area of lowland stretching back from an ocean or sea. It can be very narrow or several hundred miles wide.

Coconut palm A palm tree that grows in the tropics. It is found mainly on the shore, especially on the shores of Pacific islands. The nut of this palm tree is good to eat and contains milk that is refreshing to drink. Coconut oil is used to make candles, soap, and margarine. The trunks and leaves provide timber and material for thatching. Coconut fibre is used for making ropes, door-mats, carpets, and coarse brushes.

Coke Coal that has been exposed to great heat, which has driven off some of the gases in the coal. Coke is used mainly as a fuel for blast furnaces.

Coking coal Soft coal.

Colony A country governed by another country.

Commerce The people who arrange to have raw materials brought to a factory and the finished goods distributed and transported to market are engaged in commerce. Commerce includes everything in the way of trade, the exchange of goods, land etc., especially when done on a large scale.

Community A group of people living in the same area, usually under the same local government.

Cone-bearing trees Trees that have needles instead of broad leaves, and seeds that grow in cones. They are usually evergreen. Such trees are also called coniferous trees.

Conservation The preservation of natural resources, especially soil and forests.

Consumer The person who buys something to use himself rather than to sell.

Continent Each of the seven large land masses of the world: North America, South America, Europe, Africa, Asia, Australia, and Antarctica.

Continental climate Continental climates are found in lands in the middle of continents. Their climate is little affected by the ocean. Lands with continental climates have higher temperatures in summer and lower temperatures in winter than lands in the same latitudes that are near oceans.

Continental divide The height of land that separates rivers flowing into one ocean from the rivers flowing into another ocean. One continental divide in North America runs along the crest of the Rocky Mountains.

Continental shelf The area of shallow water that surrounds the continents. From the continental shelf the floor of the ocean dips down steeply to the lower floor of the ocean. The continental shelves are really parts of the continents that have sunk beneath the surface of the ocean.

Cool-climate crops Crops, such as wheat, barley, rye, flax, potatoes, etc., that grow in the middle latitudes or in highlands in the tropics.

Cool-climate fruit Fruit, such as apples, pears, etc., that grow in middle latitudes or in tropical highlands where the weather is fairly cool.

Co-operative A business that is run by consumers or small producers, among whom the profits are divided. In British Columbia, the apple growers have formed a co-operative, which sells their apples for them.

Copal A resin obtained from some tropical trees. It is used in varnishes, lacquers, etc.

Copra The dried meat of the coconut. It yields coconut oil, which is used in margarine and soap.

Coral The skeleton of coral polyps. It is like a hard and brittle rock. Many islands and reefs in the Pacific Ocean and the West Indies are made entirely of coral.

Coral polyps Tiny water creatures that make for themselves a hard limey coating. They can live only in warm water and are always found in large numbers or colonies.

Cove A small bay or inlet.

Crop 1. The yield of one field or farm for a year. 2. The total harvest of one plant in a region for one year. 3. Sometimes the word "erop" is used to refer to the plants before they are harvested.

Crop rotation The growing of different erops in the same field from year to year. Some crops are very hard on the soil, and if they are grown in the same field for several years in a row, the soil loses its fertility.

Crude oil Petroleum as it eomes out of the earth. Petroleum that has not been refined.

Cultivate To prepare land for planting, and to hoe, weed, ete. the land after the seeds have been planted.

Dairy cattle Cows that are raised and fed to produee milk.

Dam A barrier plaeed across a river to hold back the water. Dams are used to store water and to control flooding.

Degree The unit of measurement used to measure the amount of turning. If you turn right around, you have turned through 360°. A degree is therefore 1/360 of a eomplete turn or eircle.

Delta An area of land at the mouth of a river, usually fan-shaped, ereated of soil washed down by the river.

Density of population The average number of people per square mile.

Dependency A territory or state ruled by another eountry.

Deposit A eolleetion of ore in the earth.

Derriek (oil) A tower-like strueture used for raising and lowering the maehinery used in drilling an oil well.

Desert A region that has very little rain, usually less than 10 inches a year. Some deserts consist of bare roek or sand, but most deserts have a sparse eovering of vegetation.

Desert vegetation Plants that require very little moisture, which grow in deserts. They grow far apart. They exist on the rain water that oceasionally falls.

Dike A bank of earth built to keep water away from low-lying land. Dikes are used to hold baek flood water, or to keep sea water out of polder land.

Divide The height of land that separates the area drained by one river from the area drained by another river.

Dollar countries Countries where the United States or Canadian dollar is the kind of money used.

Down A grassy, hilly region in southern England. Downs are generally used as pasture.

Drainage basin The area drained by a river and its tributaries.

Drought A long dry spell.

Dry forest A tropical forest or subtropieal forest made up of trees that ean withstand a long dry spell. The trees lose their leaves in the dry season even though the growing season lasts all year.

Dune A hill or ridge of sand formed by wind piling up the sand.

Earth 1. The land areas of the world. 2. The world as a whole.

East The direetion to the right when one faees north. The direction toward whieh the world turns.

Eastern Townships The part of the provinee of Quebee that lies between the St. Lawrence lowlands and the Ameriean border and stretches from the western end of Quebee to approximately a line running east from the city of Quebee.

Elevation Altitude.

Elevator Grain elevator.

Empire A group of countries governed by the same eountry.

Entrepôt The Freneh word for plaee of deposit. In English it means a plaee to whieh goods are brought to be reshipped. Winnipeg is an entrepôt, and so is Montreal.

Environment Everything that surrounds a person or a group of people. The environment of a person includes all the things that he sees, all the people he knows, the laws of his country, what people think about various subjeets, the climate, and everything else that in any way affeets him.

Equator The parallel of latitude that is midway between the North Pole and the South Pole. The parallel of 0°.

Equatorial Of the region near the equator.

Erosion The washing or wearing away of land or roek by the aetion of moving water, ice, wind, or other agents.

Escarpment A very long, high, steep cliff.

Estuary The wide mouth of a river, where ocean and river meet.

Evergreen forest A forest in which trees never lose all their leaves at the same time. Broadleaf trees are evergreen in tropical rain forests, but in middle latitudes only eone-bearing trees are evergreen.

Export To send goods to a foreign country to be sold.

Extensive farming Farming in which large areas of land are farmed using little labor. In extensive farming maehines are usually used.

Far East The lands of eastern Asia that border the Paeifie Oeean: China, Japan, eastern Siberia, Korea, Vietnam, the Malay Peninsula, ete.

Fertile Able to produce in abundanee. Fertile land is land that produees a large yield per acre, on whieh many healthy plants ean grow.

Fertilize To put minerals, etc., into the land to make it fertile.

Finished products Products in their finished state, ready to be sold to the consumer.

Fiord A long narrow arm of the sea that is bordered by steep sides. Fiords are valleys that have been dug out by glaciers and then flooded by sea water. The name originated in Norway, where there are many fiords, but fiords are also found along the northwest coast of North America, in Chile, and along the west coast of South Island, New Zealand.

Flanders An area on the North Sea coast that lies in northern France and southern Belgium. In the Middle Ages it was a separate country.

Flax A plant from whose fibres linen is made and from whose seeds linseed oil is extracted.

Flood Water flowing temporarily over usually dry ground. Floods are usually caused by rivers overflowing their banks.

Fodder Coarse, dry feed for cattle, horses, and sheep. Farmers give their animals fodder in the winter when they cannot be put out to pasture.

Foothills Low hills that lead up to a mountain range.

Forage Food for animals, either pasturage or dry fodder.

Foundry A factory in which metals are cast into shape. Liquid metal is poured into molds, and when the metal hardens it is the shape of the mold.

Free gold Gold found naturally in its pure state and not combined with other materials. Ordinarily, only those who know what to look for can tell if there is gold in a rock, but free gold can be seen by anyone. Free gold ean be taken from some rivers in which it is carried along with other silt.

Free port A port or section of a port in which goods can be landed, stored, and reshipped without any import duties having to be paid.

Frontage The part of a piece of land that lies along a street, river, lake, etc.

Frost-free season The season between the last frost and the first frost. The growing season.

General farming Farming that does not specialize in one or two products; it generally includes raising animals as well as growing various crops.

Generator A machine that generates or produces electricity. Large generators are usually powered by falling water or steam pressure.

Geography The study of the earth (land, sea, air, weather, vegetation, animal life, etc.) as the home of man. The study of the earth in relation to mankind; of how human beings adjust themselves to their surroundings; of the interaction between man and his natural environment.

Geology The study of rocks and the history of the earth (but not the history of man).

Geyser A hot spring that every so often sends a jet of hot water and water vapor into the air.

Gill net A net suspended just under the surface of the water from buoys. Fish swim into the meshes of the net and get their gills caught so that they cannot back out of the net. The meshes of the net are small enough so that the fish cannot swim through the holes.

Glacier A river of ice that moves forward very slowly. Glaciers are found in polar regions and on the tops of high mountains.

Globe A model of the earth. A map of the world drawn on the surface of a ball. Because globes are almost the same shape as the earth, they show sizes and distances more accurately than flat maps do.

Gorge A deep and very narrow valley, usually with a river running through it.

Grain 1. The seed or fruit of cereal grasses, such as wheat, rice, etc. 2. The plants from which grain is obtained.

Grain elevator A building for storing grain.

Grassland A large area where the natural vegetation is grass. There are sometimes scattered trees in grasslands, especially where there is a stream or river. Grasslands have either a fairly dry season or do not receive much rain at any time. (Most trees need moisture all year round in order to survive.)

Great-circle route The shortest distance along the surface of the earth between two points. A great circle is any circle drawn around the earth that divides the earth in half. The centre of such a circle is always the centre of the earth.

Great Divide The divide that runs along the top of the Rocky Mountains. It divides the rivers that flows west into the Pacific Ocean from those that flow east into the Arctic Ocean, Hudson Bay, and the Gulf of Mexico.

Great Lakes Lake Superior, Lake Michigan, Lake Huron, Lake Erie, and Lake Ontario.

Greenhouse A glass building in which plants are grown. The glass allows the sun's rays to reach the plants, but keeps out the cold.

Groundnut Peanut.

Growing season The season between the last frost and the first frost when the average temperature is above 42°.

Gulf Part of an ocean or sea that extends into the land. It is like a bay, but larger.

Gulf Stream The wide and deep current of warm water that flows through the Atlantic Ocean. It comes from the Gulf of Mexico, moves northward along the coast of the United States to just beyond New York, and from there it crosses the ocean to northern Europe. East of 60° west longitude it becomes part of the North Atlantic Drift, a great mass of moving water.

Gypsum A mineral used in making plaster of Paris.

Habitant A farmer of New France.

Harbor A sheltered body of water, where ships can tie up safely.

Hay Any grass that is dried to be used as feed for animals.

Heavy manufacturing Industry in which both the products and the raw materials are large and heavy. Such industry requires large quantities of raw materials and fuel.

Herdsman A man who takes care of a herd of animals as it wanders over the land searching for food.

Highland Land that is higher than the land around it. Highland is usually hilly.

High latitude Any latitude with a high number roughly those above 60° north or south latitude.

Hill Land rising above the surrounding land. A hill is lower than a mountain and is usually rounded on top.

Hill station A resort in India that is high enough to be fairly cool, to which Europeans go in the hot season.

Horsepower A unit for measuring the power of a motor.

Hurricane An extremely violent wind storm, usually accompanied by rain, thunder, and lightning. Hurricanes originate in tropical and subtropical seas, but sometimes move northward, particularly in North America.

Hydro-electricity Electricity produced by water power.

Iberian Peninsula The peninsula that contains Spain and Portugal.

Icecap A large permanent body of ice and snow that covers a vast tract of land. Icecaps exist where the average temperature is not above 32°. One icecap is the one that covers Greenland.

Ice field 1. A large sheet of ice on the sea or ocean. 2. A flat area of permanent ice and snow on land.

Immigrant A person who comes to a country not his own to settle permanently.

Import To bring goods into a country to sell.

Import duty A tax that has to be paid on goods being imported.

Indented shoreline A coast with many inlets, bays, etc.

Industry A business that produces goods to sell.

Inlet A narrow strip of water jutting into the land.

Intensive farming Farming in which a great deal of labor is used for each acre of land. Usually a large amount of fertilizer is used. Land that is farmed intensively produces a higher yield per acre than it would if it were farmed extensively. It pays to farm intensively where land is scarce and labor is not expensive, or when the value of the crop is high.

Interculture The growing of one crop with another crop in the same field, usually in alternate rows. Sometimes the harvest times and planting times are different for the two crops.

Iron pyrites A mineral from which sulphur can be extracted. It is used for making sulphuric acid.

Irrigate To bring water to farm land by canals or pipes. Irrigation is carried on where the natural rainfall does not provide enough water for farming. It is also used in rather dry areas to increase the yield of high value crops.

Island Land that is entirely surrounded by water.

Isthmus A narrow piece of land, with water on either side, that joins together two larger areas of land.

Junk A type of Chinese boat, with a flat bottom, square prow, high stern, and four-cornered sails.

Kaolin A very white clay that is used to make porcelain, a fine type of china.

Kapok The silky fibres of the kapok tree. Because it is water resistant, it is used to stuff life jackets, mattresses, etc. It cannot be woven. The tree is native to South America, but it is now grown in Tanganyika, the East Indies, and the Philippines.

Kernel 1. The seed of a cereal. 2. The soft part of a seed or nut.

Key (of map) A chart explaining the symbols on the map.

Labor 1. Workers or laborers as a group or class. 2. The work done by laborers or workers.

Lake An inland body of fresh water larger than a pond.

Landlocked Enclosed by land; cut off from the ocean.

Latitude Distance from the equator measured in degrees.

Lava 1. Liquid rock that has escaped from inside the earth to the surface of the earth through a volcanic eruption. 2. The liquid rock after it has hardened on the surface of the earth.

Leeward The leeward side of anything is the side that is sheltered from the wind; the opposite side from that from which the wind is blowing.

Lighter A boat used for loading and unloading ships where the water is too shallow for ships to tie up at the land.

Lignite A low-grade coal in which the wood fibres can sometimes still be seen. (All coal was originally trees or plants of some sort. The vegetable matter is compressed when it is buried in the earth and turns into coal.) Lignite is half way between peat and soft coal. It cannot be used to make coke, but can be used as a fuel.

Limestone A type of rock. It is used in making steel.

Linseed oil The oil extracted from flax seeds. It is used in making oil paints, printers ink, etc.

Livestock Domestic farm animals.

Llanos A Spanish word for a flat, treeless plain. It is usually used in connection with such plains in northern South America.

Loess A fine dust deposited by the wind.

Longitude Distance east and west measured in degrees from the Greenwich meridian.

Low Countries Belgium, the Netherlands, and Luxembourg.

Low latitudes Latitudes with low numbers, roughly those latitudes below 30°.

Lowland 1. Low, level country. 2. Land that is lower than the surrounding land.

Lumber Timber, especially timber that is split into planks; wood used in construction, furniture building, etc., but not used to make paper.

Mainland The main body of land, as opposed to islands and peninsulas.

Maize The European word for corn.

Manioc Cassava.

Manufacture To make. Usually to produce something in a factory.

Map A flat representation of the earth or part of the earth.

Maritime Of the sea or ocean; bordering on the sea.

Maritime Provinces New Brunswick, Nova Scotia, and Prince Edward Island.

Maritimes The Maritime Provinces.

Market 1. A place where articles are bought and sold. 2. A region where a certain article is sold. 3. To sell.

Market garden A garden in which vegetables or small fruits are grown to be sold.

Marsh An area of wet, soft land. Trees do not grow in marshes.

Meat packing Preparing animals to be sold as meat. Meat packing includes cutting up the animals, curing the meat, freezing it, etc.

Mediterranean climate A climate similar to that of the Mediterranean countries. Most of the rain falls in the winter, and the summers are dry and sunny. Winters are usually warm.

Merchandise Goods to be sold.

Merchant marine 1. The ships of a nation that are used for carrying merchandise. 2. The men who run the ships of the merchant marine.

Meridian Any imaginary line along the surface of the earth that joins the two poles by the shortest route. Each meridian is half of a great circle. The meridians are numbered east and west from Greenwich, England.

Metropolitan Of a metropolis. A metropolis is a large city.

Middle America The land and islands that lie between the United States and South America.

Middle East The region of southern Asia, southwest Asia, and northeast Africa. It is a very indefinite term and hard to define exactly. The Middle East includes Egypt, Iraq, India, etc.

Middle latitudes Roughly, the latitudes between 30° and 60° north and south latitudes.

Millet A type of cereal that has a small kernel. It is grown in the United States, Canada, and most of Europe for fodder, and in Asia and Africa as food.

Mineral 1. Ore. 2. Anything, such as rock, that is not animal or vegetable.

Mixed farming General farming.

Mohair 1. An expensive, smooth cloth made from the hair of the Angora goat. 2. The hair from which the cloth is made.

Moor A tract of wasteland, usually with heather growing on it, and often marshy.

Monsoon The prevailing winds of Asia and Africa that shift direction with the season. They blow from the land in winter and from the ocean in summer.

Monsoon lands Lands where the monsoons blow: northern Australia, the East Indies, the southern and eastern coasts of Asia, and northwestern Africa.

Mountain Land that rises for a considerable height above the surrounding land, generally to over 2000 feet. Mountains usually have fairly small summits and are largely composed of rocks.

Mountain range A series of mountains arranged roughly in a line.

Mountain system A group of mountain ranges.

Mouth (of a river) The place where a river flows into a body of water.

Muskeg An area of damp, spongy land. The earth is usually covered with moss and decaying leaves, which sink when stepped on. Tamaracks, cedars, and spruce may grow in muskegs, but where the muskeg is very deep, no trees can grow.

Mutton The meat of sheep. On this continent it is usually called lamb.

Natural environment The part of the environment that occurs naturally, such as climate, lakes, valleys, etc.

Natural gas A gas found in pockets under the earth's surface, usually in the same area as petroleum is found. It is used for fuel and for other purposes.

Natural resources The resources of a region supplied by nature, such as mineral deposits, forests, fishing grounds, water power, etc.

Natural vegetation The original vegetation of an area before men introduce new plants or cut down the trees or in other ways destroy the original vegetation.

Navigable Capable of being navigated by a ship: deep and wide enough for a ship to sail on.

Near East The Balkan states and southwest Asia; it sometimes also includes Egypt.

New England Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut.

Newsprint Cheap paper on which newspapers are printed. It is made chiefly from wood pulp.

Nomad A member of a tribe that has no permanent home, but wanders from place to place looking for pasture for its animals.

North The direction toward the North Pole.

Northern hemisphere The half of the earth that is north of the equator.

North Pole The end of the earth's axis that is to your left when you face the rising sun. The earth spins like a top around an imaginary line that passes through the centre of the earth, called an axis.

Oasis A place in the desert where there is vegetation because there is water. The water is supplied by a river, or a spring or well fed by a supply of underground water.

Ocean 1. The large body of salt water that covers most of the surface of the earth. 2. One of the five large divisions of this ocean: the Atlantic Ocean, the Pacific Ocean, the Indian Ocean, the Arctic Ocean, and the Antarctic Ocean.

Oil A liquid obtained from animals or vegetables that does not dissolve in water. Also oil, such as petroleum, that is found in pockets under the surface of the earth. Petroleum was originally vegetable oil. Oil is used in paints, margarine, cooking oils, candles, fuel, soap, etc.

Oil palm A palm tree that grows in tropical rain forests that is valuable for the oil obtained from its seeds and fruit.

Ore Any rock or other substance in which valuable minerals are found in quantities worth mining.

Oriental Of the Orient (Asia).

Outline map A map on which only the outlines of the continents and sometimes political boundaries and rivers are drawn. There are no place names on an outline map.

Paddy field A flooded field in which rice is grown.

Palm tree A tropical or subtropical tree that has a single stem topped by a crown of large leaves. The most valuable palm trees are coconut, date, sago, and oil palm trees.

Pampas A Spanish word for grassland. It is usually used to refer to the large treeless plains of southern South America.

Parallels of latitude Imaginary lines drawn around the earth parallel to the equator. The latitude of all the points on such a line is the same.

Parkland A grassland with clumps of trees scattered through it.

Pass 1. A gap or passage of lower ground in a mountain range by which people can get through the range. 2. Such a gap between two mountains.

Pasture Land covered with grass, etc. that is used for grazing animals.

Peat A type of compressed, decomposed vegetable matter found in certain swamps. It can be cut like turf, and when dried it is used as fuel, as litter for poultry houses, and for packing nursery stock.

Peninsula A body of land jutting out into water. A peninsula is almost surrounded by water.

Petroleum An inflammable oil found in pockets underneath the surface of the earth. It is made into gasoline, naphtha, kerosene, lubricating oil, etc.

Phosphate A substance found in bones and certain rocks that is used in fertilizers, medicines, etc.

Physical-political map A map that shows the height of the land by different colors, the political boundaries, and place names. There is an international agreement among map makers as to which colors stand for which heights.

Piedmont Hilly land at the foot of mountains. It is usually used to refer to the upland region that stretches from the Hudson River to the centre of Alabama between the Appalachian Mountains and the coastal plain.

Pitchblende A mineral from which uranium and radium are obtained.

Plain A broad stretch of level land, often grassland, and usually less than 500 feet above sea level.

Plantation A very large tropical or subtropical farm that grows only one crop. A plantation is worked by hired laborers, usually not of the white race.

Plateau An area of high, level land, sometimes deeply cut by rivers.

Polar regions 1. The lands north and south of the tree line. 2. The areas around the North and South Poles.

Polder Low-lying land that has been reclaimed from the sea. Dikes are erected to keep out the sea, and the land behind the dikes is pumped dry.

Political boundaries The boundaries of countries states, provinces, etc.

Population The number of people living in an area.

Port A town with a harbor that has been developed to provide docks for ships and facilities for storing, loading, and unloading ships.

Port of call A port at which ships usually call to take on supplies, make repairs, etc.

Potash A substance obtained from wood ashes. It is used in making soap, glass, and other things.

Powerhouse—power plant A building in which power is generated.

Prairie A large area of level grassland. The term is most frequently used to describe the less arid grasslands of North America. The natural vegetation of a prairie is tall grass. Farming can be carried on on prairies without irrigation.

Prairie Provinces Alberta, Saskatchewan, and Manitoba.

Prevailing winds The winds from the direction from which the wind usually blows in a region.

Process To treat or prepare something to make it ready to be sold or used.

Produce That which has been produced; often used to refer to the plant products of a farm.

Products That which has been produced.

Protectorate A country, usually one inhabited by native tribes, that is under the special protection of a European country. In return for such protection, the European country is given some control over the government of the protected country, usually in the field of foreign affairs and finance.

Pulp Wood pulp.

Pulpwood Soft wood from such trees as spruces, from which paper is made.

Quarry An open pit from which rock, etc. for building is taken.

Radium A radio-active element found in pitchblende, used in taking x-rays, and for treating cancer.

Raffia palm A tree from whose leaves a fibre called raffia is obtained. Raffia is used for tying up plants, embroidering, and making baskets, etc.

Rainfall A fall of rain; the amount of precipitation (rain, snow, hail, etc.) that falls in an area. In computing the total rainfall, 12 inches of snow is considered to be equal to one inch of rain.

Rain shadow An area that has little rain because mountains protect it from rain is in the rain shadow.

Ranch A very large farm, usually one on which horses, cattle, or sheep are raised.

Range A sparsely populated grassland region over which cattle, sheep, or horses can wander in search of food. Range land is often semi-desert.

Range Mountain range.

Rapid A section of a river in which the water moves swiftly over rocks, many of which break the surface of the water. The water in rapids is very rough.

Raw materials The materials out of which something is manufactured.

Reef A rock, sand, or coral ledge lying close to the surface of the water, and sometimes even breaking the surface of the water.

Refine To reduce to a pure state by getting rid of all other matter.

Region An area all parts of which have one or more than one thing in common, such as the same climate, the same vegetation, etc.

Reservoir A place where water is stored for future use.

Resources A supply of something that will meet a need. A country's resources are the total of all the minerals, timber, transportation routes, man power, factories, etc., that it possesses.

Revenue The money collected by a government through taxes, customs, rents, etc.; income.

Revictual To take on more supplies of food.

Ridge 1. A raised piece of land that is long and narrow and has a fairly sharp edge running along the top. 2. A range of hills or mountains.

Rio A Spanish word for river.

River A large stream. A fairly large amount of water flowing in a channel to another river or body of water.

Root crop A crop of plants, such as potatoes, turnips, cassava, etc., for whose roots the plant is grown.

Rotating crops Crop rotation.

Route The way or course that is travelled.

Row crop Plants that are grown in rows, such as corn, tobacco, etc.

Rural Of the country, as opposed to the city. A rural landscape is a country landscape.

Sampan A small boat used by the Chinese and the Japanese to carry cargo on rivers. It has one sail. It is propelled by a sail and a scull.

Sand bar A bank of sand built up by currents of water, usually at the mouth of a river.

Sandspit A low-lying tongue of sand projecting from land into water. It is built up by water currents depositing sand.

Savannah A tropical or subtropical grassland, often containing scattered trees. There is bare ground between the clumps of grass. The grass is coarse and grows quite tall. Savannah is found in regions that have high temperatures and a dry season.

Sawmill A place where logs are sawed into planks.

Scale The size of a model, plan, or map, etc., compared to the size of the thing it represents. If a mile is shown in a map as one inch, the scale of the map is one inch to the mile. It may be written as 1:63,360. (There are 63,360 inches in a mile.)

Scandinavian Peninsula The peninsula that contains Norway and Sweden.

Scrub forest A forest consisting of stunted trees and bushes.

Sea 1. A large body of salt water that is smaller than an ocean. 2. A large body of inland water, especially if it is salt. 3. The ocean.

Seaboard Land bordering a sea or ocean.

Sea level The height of the surface of the ocean.

Sediment Particles of earth that have been deposited by water.

Semi-desert A region that is almost desert. It has enough rain to support grass, but not enough for farming without irrigation.

Seter A mountain meadow in Norway or Sweden.

Shipping 1. The business of people who ship goods. 2. The ships of one company, port, or country. 3. Ships in general.

Shoal (of fish) A large number of fish swimming together.

Shore The land on the very edge of a body of water.

Silt Small particles of rock, soil, etc. suspended in water. It is eventually deposited as sediment.

Sisal A plant that has coarse fibres that can be made into rope. Sisal grows in dry, tropical regions.

Site The exact location of a building, city, etc., or where such a thing is going to be. The place where an event took place.

Smelt To melt ore in order to separate the metal from the rest of the material.

Social environment The part of the environment that is composed of people and the things created by people, such as laws, roads, dams, etc.

Soft coal A coal that contains a great many gases. It burns with a lot of smoke and a yellow flame, and makes the best coke.

Soil Earth in which plants grow or can be grown. Soil contains decayed vegetable matter, minerals, air, and water. It takes a long time to be created, but can be lost rapidly by unwise farming methods.

Sorghum A cereal grass much like corn. It needs less moisture than most grain.

Sound A long body of water joining larger bodies of water. It is like a strait, but wider.

Source (of a river) The beginning of a river or stream.

South The direction toward the South Pole.

Southern hemisphere The half of the world that lies south of the equator.

South Pole The end of the earth's axis that is to your right when you face the rising sun. The earth spins like a top around an imaginary line that passes through the centre of the earth, called an axis.

Spring A steady stream of water issuing from the ground.

Spring wheat Wheat that is planted in the spring.

Staple diet The food that the people of a region eat all the time. The term is most often used when little other food is eaten. Rice is the staple diet of many eastern countries. It is eaten at almost every meal.

Steam power Power created by steam pressure. Such pressure will turn an engine.

Steppe A large, dry, treeless grassland in the middle latitudes. The grass does not grow very tall.

Sterling area A country whose money can easily be changed into British money. Countries in the sterling block find it hard to get dollars to buy things from dollar countries.

Stock Livestock.

Stockyard A yard where cattle, sheep, etc. are kept while waiting to be slaughtered.

Strait A narrow body of water connecting two bodies of water.

Stream A small river.

Subcontinent A large land mass, smaller than a continent, that is in some way set apart from the rest of the continent.

Subsistence farming Farming that produces only enough products for the farmer and his family with nothing or very little left over to sell.

Subtropical Nearly tropical; areas immediately north of the tropics or immediately south of the tropics.

Subtropical products Products that are produced in lands near the tropics, such as olives, citrus fruit, cotton, grapes, winter wheat, etc.

Sulphur A yellow chemical that occurs naturally and can be mined. It is used in making gunpowder, matches, laxatives, and other products.

Surface features Geographic features of the earth's surface, such as mountains, valleys, hills, lakes, rivers, oceans, etc.

Swamp Wet, spongy land full of water, but not usually covered with water. A swamp may have trees in it.

Taiga The northern cone-bearing forest. The growing season there is too short for most broadleaf trees. There are often stretches of swampy land is the taiga. The word "taiga" usually refers to such forests in the Soviet Union.

Tallow The fat of animals of the cow and sheep families. It is used in candles and margarine.

Temperate climate A climate in which the weather is never extremely hot or extremely cold.

Terminus The place where something such as a shipping lane or a railway ends.

Terrace A piece of level land on the side of a hill or mountain. Man-made terraces are usually held up on the side away from the hill by a wall. They are built one above another up the hill.

Textiles Woven cloth, such as cotton or wool cloth.

Tide The regular rising and falling of the surface of the ocean, caused by the pull of the moon. As the level of the surface of the ocean rises, water flows over the low-lying ground on the shore of the ocean and up rivers. The water rises and falls about twice every day.

Timber Wood suitable to be used for building.

Timber line Tree line.

Titanium A light, strong, noncorrosive metal. It is used in airplanes and jet engines. It is also used in paints and in the manufacture of linoleum, paper, rubber, etc.

Topsoil The layer of earth on the surface of the earth. It is fertile; the earth underneath it is not.

Trade The buying and selling of goods. It includes the buying and selling of raw materials

as well as the selling of goods to stores and consumers. It also includes the transporting of goods to market.

Trade route A route along which it is usual for trade goods to travel. Trade routes are the routes most travelled by merchant ships, freight trains, trucks, caravans, etc.

Trade winds In the regions between 25° north latitude and 25° south latitude the wind usually blows from the east or from the northeast or southeast. These winds are known as the trade winds.

Tractor train A number of large sleds pulled by a tractor.

Transition region A region between two distinct regions, in which the characteristics of both regions are found. For example, a transition region between a forest region and a grassland region contains both types of vegetation. Near the forest region there are more trees than grass, and near the grassland there are fewer trees and more grass.

Transit trade Business arising out of the passing of goods through a country without the goods being bought or sold in that country.

Transportation The means of carrying people and goods from place to place.

Tree line 1. The line on mountains above which no trees grow. 2. The line north of which trees do not grow and the line south of which trees do not grow.

Tributary A river that flows into a larger river.

Tropical climate A climate in which the average temperature is much the same the whole year round, usually above 75°. The amount of rainfall is also high, above 80 inches, and evenly distributed throughout the year.

Tropics The lands between the Tropic of Cancer and the Tropic of Capricorn.

Tropical Of the tropics.

Tropical forest A forest that grows in the tropics. Tropical rain forests are found where there is rain the year round. In areas where there is plenty of rain but also a dry season, there are forests of broadleaf trees that lose their leaves during the dry season.

Tropical rain forest A very dense forest found in tropical countries where there is a plentiful rainfall and no dry season. The trees are broadleaf evergreens.

Tropic of Cancer The parallel of 23½° north latitude. This is the farthest point north at which the sun is ever directly overhead. The sun is directly overhead at the Tropic of Cancer on June 21.

Tropic of Capricorn The parallel of 23½° south latitude. This is the farthest point south at which the sun is ever directly overhead. The sun is directly overhead at the Tropic of Capricorn on December 22.

Truck garden Market garden.

Trust territory After the First World War a number of colonies were taken away from the defeated nations. These colonies are called trust territories, and are under the control of the United Nations. Various countries govern the trust territories for the United Nations.

Tundra The land north of the tree line. This land is frozen in winter. In summer the upper few feet of earth thaw, and because the melted water has nowhere to go, the land becomes marshy. The earth that is more than a few feet from the surface of the earth is permanently frozen.

Tundra vegetation The vegetation that grows in the short growing season of the tundra: mosses, lichens, some grasses, bushes, certain flowers, and stunted trees.

Uplands High land, usually hilly.

Uranium A radioactive element found in pitchblende; it is used to create atomic energy.

Urban Of the city as opposed to the country. The urban population is the population of the cities.

Valley A long area of lowland between areas of higher ground.

Vegetation Plants, trees, etc. in general.

Volcanic soil Soil formed when volcanic rock breaks down into small particles. It is often very fertile.

Volcano A hole in the surface of the earth through which lava from within the earth reaches the surface of the earth from time to time. A mountain is gradually built up around the hole, formed of the lava when it hardens. A violent volcanic eruption throws clouds of smoke and gases and even rocks high into the air while lava flows out of the hole.

Warm-climate fruit Fruits, such as citrus fruits, figs, olives, and pomegranates, that grow in warm climates.

Water power Power created by water. Falling water can turn a machine.

West The direction to the left of someone facing north. The direction away from which the earth turns.

Windward The windward side of anything is the side from which the wind is blowing.

Winter wheat Wheat that is planted in the autumn and begins to grow in the early spring.

Wood lot A small area covered with trees in areas where the rest of the trees that originally grew on the land have been cut down.

Wood pulp The mixture of water and ground-up wood fibre from which paper is made.

World The Earth. The planet on which we live.

REFERENCE TABLES

AREA AND POPULATION OF THE CONTINENTS, EXCEPT ANTARCTICA, AND OF THE COUNTRIES OF THE WORLD.

	AREA IN SQ. MILES	POPULATION
EUROPE	3,800,000	590,500,000
Albania	11,096	1,250,000
Austria	32,375	6,933,905
Belgium	11,775	8,840,704
Bulgaria	42,796	7,450,000
Channel Islands	75	100,513
Cyprus	3,572	513,700
Czechoslovakia	49,381	13,157,000
Denmark	16,578	4,281,275
Finland	130,119	4,215,900
France	212,655	42,777,174
Germany	136,758	70,019,900
Gibraltar	2	24,278
Greece	51,246	7,632,801
Hungary	35,912	9,860,000
Iceland	39,768	156,033
Irish Republic	26,600	2,960,593
Isle of Man	227	54,499
Italy	116,290	47,515,537
Luxembourg	998	298,578
Malta	95	330,000
Netherlands	13,433	10,680,023
Norway	125,064	3,375,870
Poland	120,360	27,500,000
Portugal	35,420	8,441,312
Romania	91,671	17,000,000
Spain	193,144	29,212,631
Sweden	173,592	7,234,664
Switzerland	15,941	4,714,992
United Kingdom	94,205	51,261,300
England and Wales	58,343	44,441,000
Northern Ireland	5,451	1,387,000
Scotland	30,411	5,133,300
U.S.S.R. (Europe and Asia)	9,420,849	193,200,000
Yugoslavia	98,993	16,927,275
ASIA	17,035,000	1,515,400,000
Aden	112,108	950,000
Afghanistan	250,000	11,500,000
Bahrain	213	120,000
Bhutan	18,000	600,000
Brunei	2,226	56,000
Burma	261,789	19,242,000
Cambodia	69,884	4,500,000
Ceylon	25,332	8,385,000
China	3,745,296	594,346,737
Federation of Malaya	50,680	5,982,588
Formosa (Taiwan)	13,890	9,500,000
Hong Kong	396	2,340,000
India (see Union of India)		
Indonesia	675,672	80,000,000
Iran	633,205	20,843,681
Iraq	171,599	4,948,000
Israel	8,048	1,717,834
Japan	142,165	88,800,000
Jordan	37,259	1,500,000
Korea - North	49,114	8,229,000
- South	36,152	21,526,374
Kuwait	5,800	200,000
Laos	91,429	2,000,000
Lebanon	3,400	1,400,000
Macao	6	187,772
Mongolia	591,120	1,000,000
Muscat and Oman	82,000	550,000
Nepal	54,000	8,431,537
Netherlands New Guinea	160,000	700,000
North Borneo	29,837	360,000
Pakistan	364,737	75,842,135
Papua and Territory of New Guinea	183,500	1,701,458
Philippines	115,707	21,650,000
Portuguese India (Goa)	1,538	637,591
Sarawak	47,000	613,879
Saudi Arabia	597,000	2,000,000
Singapore	225	1,210,534
Syria	72,234	3,806,973
Thailand (Siam)	198,456	17,442,589
Turkey (Asia and Europe)	296,185	2,341,889
Union of India	1,269,640	376,750,000
Vietnam - North	63,360	12,963,900
- South	65,726	9,648,970
Yemen	75,000	4,500,000
AFRICA	11,530,000	215,700,000
Algeria	850,965	9,530,510
Angola	481,351	4,145,266
Basutoland	11,716	563,854
Bechuanaland	275,000	296,883
Belgian Congo	904,992	12,115,470
British Somaliland	68,000	600,000
Cameroons	166,489	3,115,600
Cape Verde Islands	1,557	147,331
Egypt	386,198	22,469,000
Ethiopia	395,000	18,000,000
Federation of Rhodesia and Nyasaland	490,010	7,070,000
French Equatorial Africa	969,112	4,491,785

	AREA IN SQ. MILES	POPULATION
French Somaliland	8,100	63,700
French West Africa	1,789,183	17,675,400
Gambia	4,003	253,234
Ghana (Gold Coast)	91,843	4,619,000
Kenya	224,960	5,405,966
Liberia	43,000	1,000,000
Libya	679,358	1,091,830
Madagascar	227,761	4,666,638
Mauritius	720	538,918
Morocco (Fr.)	162,162	8,340,000
Morocco (Sp. with Ifni)	18,454	1,210,714
Mozambique	297,732	5,732,317
Nigeria	373,250	31,171,000
Portuguese Guinea	13,948	510,777
St. Helena	47	4,877
Seychelles	156	37,129
Sierra Leone	27,925	2,005,000
Somalia (Italian Somaliland)	178,201	1,268,497
Spanish West Africa	165,409	13,627
Sudan	967,500	8,961,000
Swaziland	6,705	185,215
Tanganyika	362,688	8,250,000
Tangier	144	172,300
Tunisia	48,195	3,143,498
Uganda	93,981	5,425,000
Union of South Africa	472,733	12,667,759
Zanzibar	1,020	264,162
SOUTH AMERICA	7,035,357	123,000,000
Argentina	1,072,745	19,110,489
Bolivia	424,163	3,162,000
Brazil	3,287,198	58,456,000
British Guiana	83,000	460,000
Chile	286,397	5,930,809
Colombia	439,520	12,657,070
Ecuador	104,510	3,619,345
Falkland Is.	4,618	2,300
French Guiana	34,749	27,863
Paraguay	157,039	1,565,000
Peru	482,259	9,295,000
Surinam	55,144	237,930
Uruguay	72,172	2,550,000
Venezuela	352,143	5,774,000
NORTH AMERICA	9,385,000	239,100,000
Alaska	586,400	128,643
Bahamas	4,404	92,598
Barbados	166	227,550
Bermuda	21	40,500
British Honduras	8,867	78,094
Canada	3,845,774	16,080,791
Costa Rica	19,690	951,477
Cuba	44,206	5,832,277
Dominican Republic	18,712	2,403,988
El Salvador	8,259	1,855,917
Greenland	840,154	25,302
Guatamala	42,042	2,790,868
Haiti	10,714	3,111,973
Honduras	43,227	1,608,000
Jamaica	4,411	1,503,047
Leeward Islands	1,577	450,163
Mexico	760,375	28,849,000
Nicaragua	57,143	1,224,450
Panama	28,576	837,100
Puerto Rico	3,418	2,600,000
Trinidad	1,980	697,550
United States of America	3,022,387	167,181,000
Windward Islands	925	485,839
OCEANIA		
Australia	2,974,581	9,149,477
British Solomon Islands	11,500	100,297
Cook Islands	90	15,899
Fiji	7,036	333,389
Gilbert and Ellice Islands	369	39,764
Guam	206	59,498
Hawaii	6,423	499,794
New Caledonia	8,548	64,661
New Hebrides	5,700	52,960
New Zealand	103,736	2,130,927
Samoa - American	76	18,937
- Western	1,133	94,128
Tonga	270	53,086

AREA AND POPULATION OF THE PROVINCES AND TERRITORIES OF CANADA

Alberta	255,285	1,123,116
British Columbia	366,255	1,398,464
Manitoba	246,512	850,040
New Brunswick	27,985	554,616
Newfoundland	155,364	415,074
Northwest Territories	1,304,903	19,313
Nova Scotia	21,068	694,717
Ontario	412,582	5,404,933
Prince Edward Island	2,184	99,285
Quebec	594,860	4,628,378
Saskatchewan	251,700	880,665
Yukon	207,076	12,190

INDEX AND PRONOUNCING VOCABULARY

An asterisk (*) indicates a picture.

Key to pronunciation:

a	hat, am	i	it, pin	th	thin, both
ā	ate, face	ī	ice, five	th	then, smooth
ã	care, air				
ä	father, arm	ng	long, bring	u	cup, son
				u̇	put, sure
e	let, end	o	hot, odd	ü	rule, food
ē	equal, see	ō	open, go	ū	use, music
ėr	term, learn	ô	order, all		
		oi	oil, toy	zh	measure, seizure
g	go, bag	ou	out, now		

ə occurs only in unaccented syllables and represents the sound of *a* in *a*bout, *e* in take*n*, *i* in penc*i*l, *o* in lem*o*n, and *u* in circ*u*s.

N is not pronounced. It shows that the vowel before it is nasalized, as in the French word, *bon*.

The mark ′ is placed after a syllable with a strong accent.

The mark ˊ is placed after a syllable with a lighter accent.

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